

Material Safety Data Sheet

Cellulose

ACC# 04371

Section 1 - Chemical Product and Company Identification

MSDS Name: Cellulose**Catalog Numbers:** S79957**Synonyms:** None**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

For information, call: 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9004-34-6	Cellulose	100	232-674-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. This is expected to be a low hazard for usual industrial handling.

Target Organs: None.

Potential Health Effects

Eye: May cause eye irritation.**Skin:** May cause skin irritation. Low hazard for usual industrial handling.**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation.**Inhalation:** May cause respiratory tract irritation. Low hazard for usual industrial handling.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation develops, get medical aid.

Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion. Dusts may be an explosion hazard if mixed with air at critical proportions and in the presence of an ignition source.

Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Very fine particles can cause a fire or explosion. Eliminate all ignition sources. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

Storage: Store in a cool, dry place. Store in a tightly closed container. Keep from contact with oxidizing materials. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cellulose	10 mg/m ³ TWA	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable dust)	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

OSHA Vacated PELs: Cellulose: 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: none reported

pH: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Evaporation Rate: Not applicable.

Viscosity: Not applicable.

Boiling Point: Not available.

Freezing/Melting Point: 500-518 deg F

Decomposition Temperature: 500-518F

Solubility: Insoluble in water.

Specific Gravity/Density: 1.27

Molecular Formula: C₆H₁₀O₅X

Molecular Weight: 162.067

Section 10 - Stability and Reactivity

Chemical Stability: Stable. Cellulose materials should be kept dry since they may undergo spontaneous combustion from the heat of microbial activity and self-sustaining oxidation. Exposure to moisture enhances microbial action.

Conditions to Avoid: Incompatible materials, moisture.

Incompatibilities with Other Materials: Bromine pentafluoride, hydrogen peroxide, sodium hypochlorite, sodium nitrate, fluorine, strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 9004-34-6: FJ5691460

LD50/LC50:

CAS# 9004-34-6:

Inhalation, rat: LC50 = >5800 mg/m³/4H;

Oral, rat: LD50 = >5 gm/kg;

Skin, rabbit: LD50 = >2 gm/kg;

Carcinogenicity:

CAS# 9004-34-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found**Teratogenicity:** No information found**Reproductive Effects:** No information found**Mutagenicity:** No information found**Neurotoxicity:** No information found**Other Studies:**

Section 12 - Ecological Information
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No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.**RCRA U-Series:** None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information
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US FEDERAL**TSCA**

CAS# 9004-34-6 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9004-34-6 can be found on the following state right to know lists: Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 9004-34-6: No information available.

Canada - DSL/NDSL

CAS# 9004-34-6 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of Not controlled..

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #4 Date: 10/03/2005

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CHEMICAL COMMODITIES (DIST),SMITH & FINAL CO (MFG) -- CORNSTARCH,TECHNICAL
-- 6810-00-656-1041

===== Product Identification =====

Product ID: CORNSTARCH, TECHNICAL
MSDS Date: 01/01/1985
FSC: 6810
NIIN: 00-656-1041
MSDS Number: BFKBJ
=== Responsible Party ===
Company Name: CHEMICAL COMMODITIES (DIST), SMITH & FINAL CO (MFG)
Emergency Phone Num: (714) 885-6203
CAGE: 60777
=== Contractor Identification ===
Company Name: CHEMICAL COMMODITIES AGENCY, INC.
Address: 27447 PACIFIC STREET
Box: City: HIGHLAND
State: CA
ZIP: 92346-2640
Country: US
Phone: 909-864-2310
CAGE: 60777

===== Composition/Information on Ingredients =====

Ingred Name: STARCH
CAS: 9005-25-8
RTECS #: GM5090000
Fraction by Wt: 100%
OSHA PEL: 15 MG/M3 TDUST
ACGIH TLV: 10 MG/M3; 9192

===== Accidental Release Measures =====

Spill Release Procedures: SWEEP UP

===== Handling and Storage =====

Handling and Storage Precautions: STORE IN DRY AREA

===== Exposure Controls/Personal Protection =====

Respiratory Protection: DUST MASK AS NEEDED
Ventilation: GENERAL
Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC: N1
Appearance and Odor: FINELY PULVERIZED AND WHITE CREAM IN COLOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES

===== Disposal Considerations =====

Waste Disposal Methods: NORMAL DISPOSAL

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PARKER FERTILIZER CO INC -- 555322 PRK. COTTONSEED MEAL 6-2-1 -- 8720-00F030228

===== Product Identification =====

Product ID:555322 PRK. COTTONSEED MEAL 6-2-1

MSDS Date:01/01/1986

FSC:8720

NIIN:00F030228

MSDS Number: BRYWF

=== Responsible Party ===

Company Name:PARKER FERTILIZER CO INC

Box:540

City:SYLACAUGA

State:AL

ZIP:35150

Country:US

Info Phone Num:205-245-5282

Emergency Phone Num:205-245-5282

CAGE:PARKR

=== Contractor Identification ===

Company Name:PARKER FERTILIZER CO INC

Box:540

City:SYLACAUGA

State:AL

ZIP:35150

Country:US

Phone:205-245-5282

CAGE:PARKR

===== Composition/Information on Ingredients =====

Inged Name:UREA; CARBAMIDE

CAS:57-13-6

RTECS #:YR6250000

Fraction by Wt: 3-61%

Inged Name:AMMONIATED PHOSPHATES

Fraction by Wt: 3-61%

Inged Name:POTASSIUM CARBONATE, POTASH, PEARL ASH

CAS:584-08-7

RTECS #:TS7750000

Fraction by Wt: 3-61%

Inged Name:INERT INGREDIENTS (TYPE NOT SPECIFIED)

Fraction by Wt: 3-61%

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL LD50 (LAB ANIMAL): 1500 MG/KG

Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:INGESTION: HARMFUL. SKIN/EYES/MUCOUS

MEMBRANES: IRRITATION.

Explanation of Carcinogenicity:NONE

Effects of Overexposure:SKIN/MUCOUS MEMBRANES: IRRITATION. EYES:

IRRITATION & BURNS.

===== First Aid Measures =====

First Aid:INGESTION: IF CONSCIOUS, INDUCE VOMITING BY GIVING 1 OR 2 GLASSES OF WATER & TOUCH BACK OF THROAT W/FINGER. NEVER GIVE ANYTHING BY MOUTH IF UNCONSCIOUS/CONVULSIONS. EYES: FLUSH W/PLENTY OF WATER. SKIN : REMOVE CONTAMINATED CLOTHING & WASH AFFECTED AREA W/SOAP & WATER. INHALATION: REMOVE TO FRESH AIR. OBTAIN MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Flash Point Method:CC

Flash Point:>400F

Extinguishing Media:WATER, FOAM, OR CO2

Fire Fighting Procedures:WEAR FULL PROTECTIVE CLOTHING & SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire/Explosion Hazard:HYDROGEN SULFIDE IS A REACTION PRODUCT & IS TOXIC & EXPLOSIVE. SULFUR DUST WILL EXPLODE AT A MINIMUM CONCENTRATION OF 35 G/CUM AIR.

===== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP PRODUCT & REPLACE IN LABELED CONTAINER. USE PRODUCT ACCORDING TO DIRECTIONS FOR USE/DISPOSE OF A DIRECTED ON LABEL.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN ITS ORIGINAL LABELED CONTAINER IN COOL, DRY LOCKED PLACE OUT OF REACH OF CHILDREN. DON'T ALLOW BAGS TO BECOME WET. AVOID TEMPS >212F.

Other Precautions:DON'T CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL. SHELF LIFE: 5 TO 7 YEARS OF GOOD PHYSICAL CONDITION IF STORED PROPERLY. AVOID CONTACT W/SKIN & EYES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF INADEQUATE VENTILATION WHERE DUST CONCENTRATIONS EXCEED RECOMMENDED PEL'S, USE NIOSH APPROVED DUST RESPIRATORS.

Ventilation:ADEQUATE

Eye Protection:TIGHT FITTING GOGGLES

Supplemental Safety and Health

COMPLETELY EMPTY BAG INTO APPLICATION EQUIPMENT. DISPOSE OF EMPTY BAG IN A SANITARY LANDFILL/INCINERATION/STATE & LOCAL AUTHORITIES BY BURNING. SOLUBILITY: GENERALLY, SLOWLY SOLUBLE IN SOIL.

===== Physical/Chemical Properties =====

Spec Gravity:0.5606-0.8329

pH:5-8

Solubility in Water:SEE SUPP.

Appearance and Odor:NATURAL MINERAL GRANULES W/FERTILIZER SALT ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

HYDROGEN SULFIDE

Stability Condition to Avoid:HEAT >212F

Hazardous Decomposition Products:UREA: CYANURIC ACID/AMMONIA/HYDROGEN CYANIDE/NITROGEN OXIDES/BIURET/CO2. SULFUR COATED UREA: SULFUR &

NITROGEN OXIDES.

===== Disposal Considerations =====

Waste Disposal Methods: IF PRODUCT CANNOT BE USED ACCORDING TO INSTRUCTIONS EXCESS PRODUCT MAY BE DISPOSED ON SITE/APPROVED WASTE FACILITY. DISPOSE IN ACCORDANCE W/LOCAL, STATE, & FEDERAL REGULATIONS. SEE SUPP

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ALDON CORP -- D(-)FRUCTOSE -- -

===== Product Identification =====

Product ID:D(-)FRUCTOSE
 MSDS Date:12/10/1996
 FSC:NIIN:Submitter:D RV
 Status Code:A
 MSDS Number: CJYXK
 === Responsible Party ===
 Company Name:ALDON CORP
 Address:1533 W HENRIETTA RD
 City:AVON
 State:NY
 ZIP:14414
 Country:US
 Info Phone Num:716-226-6177
 Emergency Phone Num:(800)424-9300
 Resp. Party Other MSDS Num.:IX 215
 Preparer's Name:MICHAEL RASZEJA
 Chemtrec Ind/Phone:(800)424-9300
 CAGE:6V042
 === Contractor Identification ===
 Company Name:AL-DON CHEMICALS INC
 Address:1533 W HENRIETTA RD
 Box:City:AVON
 State:NY
 ZIP:14414-9508
 Country:US
 Phone:716-226-6177
 CAGE:6V042
 Company Name:WARDS NATURAL SCIENCE ESTABLISHMENT INC
 Address:5100 W HENRIETTA RD
 Box:92912
 City:ROCHESTER
 State:NY
 ZIP:14692-9012
 Country:US
 Phone:(716) 359-2502
 Contract Num:MDA414-99-A-0024-0020
 CAGE:63759

===== Composition/Information on Ingredients =====

Ingrid Name:D(-)FRUCTOSE
 CAS:57-48-7
 Fraction by Wt: 100.00%
 Other REC Limits:TWA: 10 MG/M3 DUST

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL LD50(RAT): UNKNOWN.
 Routes of Entry: Inhalation:UNKNOWN Skin:UNKNOWN Ingestion:YES
 Health Hazards Acute and Chronic:THIS COMPOUND IS CONSIDERED TO BE OF
 LOW HAZARD BY INGISTION OR CONTACT. EXERCISE APPROPRIATE PROCEDURE
 TO MINIMIZE POTENTIAL HAZARD
 Effects of Overexposure:SPECIFIC DATA IS NOT AVIALABLE. THIS COMPOUND
 IS CONSIDERED TO BE OF LOW HAZARD BY INGISTION OR BY CONTACT.
 EXERCISE APPROPRIATE PROCEDURE TO MINIMIZE POTENTIAL HAZARDS. EYES.

NO SPECIFIC HAZARD IS KNOWN. HOWEVER, ANY MATERIAL THAT CONTACTS THE EYES MAY BE IRRITATING.

===== First Aid Measures =====

First Aid: EYES-FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15, LIFTING LOWER AND UPPER EYELIDS OCCASIONALLY. IF IRRITATION DEVELOPS OR PERSISTS, GET MEDICAL ATTENTION. SKIN-FLUSH WITH WATER, THEN WASH WITH SOAP AND WATER. INHALATION AS DUST-REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT. GIVE OXYGEN. IF SYMPTOMS OF ILLNESS DEVELOP, GET MEDICAL ATTENTION.

===== Fire Fighting Measures =====

Extinguishing Media: WATER SPRAY; DRY CHEMICAL (ABC); CARBON DIOXIDE (CO2)

Fire Fighting Procedures: EVACUATE PERSONNEL TO AN AREA OF UPWIND DIRECTION AND REMOVE UNNEEDED MATERIALS; KEEP FIRE EXPOSED CONTAINERS COOL WITH WATER SPRAY, AND PROVIDE THE FIGHTERS WITH SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire/Explosion Hazard: FIRE OR EXCESSIVE HEAT MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS; CAN REACT VIGOROUSLY WITH OXIDIZING MATERIALS. THIS MATERIAL IN POWDER FORM, IS CAPABLE OF CREATING A DUST EXPLOSION.

===== Accidental Release Measures =====

Spill Release Procedures: SMALL SPILLS: RECOVER FOR USE IF NOT CONTAMINATED. SWEEP UP AND PLACE IN A SUITABLE CONTAINER. DISSOLVE IN WATER AND FLUSH TO SEWER WITH COPIOUS AMOUNTS OF WATER.

===== Handling and Storage =====

Handling and Storage Precautions: STORE IN A COOL, DRY PLACE, AWAY FROM ACIDS AND OXIDIZERS. WASH THOROUGHLY AFTER HANDLING.

Other Precautions: READ LABEL ON CONTAINER BEFORE USING. DO NOT WEAR CONTACT LENSES WHEN WORKING WITH CHEMICALS. FOR LABORATORY USE ONLY. NOT FOR DRUG, FOOD OR HOUSEHOLD USE. KEEP OUT OF REACH OF CHILDREN. REMOVE AND WASH CONTAMINATED CLOTHING.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: NONE SHOULD BE NEEDED IN NORMAL HANDLING. IF DUSTY CONDITIONS PREVAIL, WORK IN VENTILATION HOOD OR WEAR A NIOSH/MSHA-APPROVED DUST MASK.

Ventilation: MECHANICAL (GENERAL): IF DUSTY.

Protective Gloves: RUBBER

Eye Protection: CHEMICAL SAFETY GLASSES.

Other Protective Equipment: SAFETY GLASSES, EYE WASH STATION, LAB COAT, VENTILATION HOOD, PROPER GLOVES

Work Hygienic Practices: REMOVE AND WASH CONTAMINATED CLOTHING.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC: T6

Boiling Pt: B.P. Text: DECOMPOSES

Melt/Freeze Pt: =104.C, 219.2F

Vapor Pres: NEGLIGIBLE AS SOLID

Vapor Density:6.2
Spec Gravity:1.60 (20/4C)
Solubility in Water:FREELY SOLUBLE
Appearance and Odor:WHITE CRYSTALLINE POWDER; NO ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS
Stability Condition to Avoid:EXCESSIVE TEMPERATURE, HEAT ORT HUMIDITY
Hazardous Decomposition Products:THERMAL DECOMPOSITION OR BURNING MAY
PRODUCE CARBON MONOXIDE AND/OR CARBON DIOXIDE

===== Disposal Considerations =====

Waste Disposal Methods:DISCHARGE, TREATMENT OR DISPOSAL MAY BE SUBJECT
TO FEDERAL, STATE OR LOCAL LAWS. THESE GUIDELINES ARE INTENDED FOR
THE DISPOSAL OF CATALOG-SIZE QUANTITIES ONLY. UNCONTAMINATED
MATERIAL MAY BE DISPOSED OF IN A SANITARY LANDFILL. OR DISPOSE OF
IN APPROVED INCINERATOR.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Gum arabic, powder

ACC# 95704

Section 1 - Chemical Product and Company Identification

MSDS Name: Gum arabic, powder**Catalog Numbers:** AC400005000**Synonyms:** Acacia.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9000-01-5	Gum arabic	> 99	232-519-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: sand.

Warning! Causes severe eye irritation. May cause allergic respiratory reaction. Causes respiratory tract irritation. May cause allergic skin reaction. Causes skin irritation.**Target Organs:** Lungs, respiratory system, eyes, skin, mucous membranes.**Potential Health Effects****Eye:** Causes eye irritation.**Skin:** Causes skin irritation. May cause hives. May cause dermatitis.**Ingestion:** May cause irritation of the digestive tract. Ingestion may cause allergic**Inhalation:** Dust is irritating to the respiratory tract. May cause allergic respiratory reaction. May cause asthmatic attacks due to allergic sensitization of the respiratory tract.**Chronic:** Chronic inhalation may cause effects similar to those of acute inhalation.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: ~~Dusts at sufficient concentrations can form explosive mixtures with air.~~

Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. ~~Avoid generating dusty conditions.~~ Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Gum arabic	none listed	none listed	none listed

OSHA Vacated PELs: Gum arabic: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: sand

Odor: Not available.

pH: Neutral

Vapor Pressure: Negligible.

Vapor Density: Not available.

Evaporation Rate: Negligible.

Viscosity: Not applicable.

Boiling Point: Not available.

Freezing/Melting Point: Not available.

Decomposition Temperature: Not available.

Solubility: Soluble in water.

Specific Gravity/Density: 1.35

Molecular Formula: Not applicable.

Molecular Weight: Not available

Section 10 - Stability and Reactivity

Chemical Stability: Stable.

Conditions to Avoid: Dust generation, excess heat.

Incompatibilities with Other Materials: Acacia precipitates or gels when added to ferric salts, borax, basic lead acetate, alcohol, sodium silicate, gelatin or ammoniated tincture of guaiac.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 9000-01-5: CE5945000

LD50/LC50:

CAS# 9000-01-5:

Draize test, rabbit, eye: 36 mg/5H Severe;

Oral, mouse: LD50 = >16 gm/kg;

Oral, rabbit: LD50 = 8 gm/kg;

Oral, rat: LD50 = >16 gm/kg;

Carcinogenicity:

CAS# 9000-01-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 9000-01-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 9000-01-5: immediate.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9000-01-5 can be found on the following state right to know lists: New Jersey.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 42/43 May cause sensitization by inhalation and skin contact.

Safety Phrases:

S 22 Do not breathe dust.

S 24 Avoid contact with skin.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

WGK (Water Danger/Protection)

CAS# 9000-01-5: 0

Canada - DSL/NDSL

CAS# 9000-01-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 5/21/1998

Revision #4 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

MSDS Number: L1044 * * * * * Effective Date: 07/29/03 * * * * * Supercedes: 10/23/00



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-998-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

LACTOSE

1. Product Identification

Synonyms: Milk sugar; (beta)-Lactose; D- Glucose, 4-O-(beta)-D-galactopyranosyl- ; (+)-Lactose; D-(+)-Lactose; Lactin; Lactose anhydrous
CAS No.: 63-42-3
Molecular Weight: 342.30
Chemical Formula: C₁₂H₂₂O₁₁
Product Codes: P347

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Lactose	63-42-3	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all

unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 0 - None

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Not expected to be a health hazard via inhalation. Inhalation of high concentrations of dust may irritate the throat.

Ingestion:

Not expected to be a health hazard via ingestion. May produce abdominal irritation if large quantities are consumed.

Skin Contact:

Not expected to be a health hazard from skin exposure. May irritate the skin on some super-sensitive persons.

Eye Contact:

Not expected to be a health hazard. May cause mechanical irritation.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If large amounts were swallowed, give water to drink and get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Lower explosive limit: 0.125 g/l in air.

Fire Extinguishing Media:

Dry chemical, alcohol foam or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a

full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals or white powder.

Odor:

Odorless.

Solubility:

Soluble in water.

Density:

1.525 @ 20C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Decomposes.

Melting Point:

202C (396F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers.

Conditions to Avoid:

No information found.

11. Toxicological Information

LD50 oral, rat = > 10 gm/Kg. Investigated as a tumorigen and a reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Lactose (63-42-3)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Lactose (63-42-3)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Lactose (63-42-3)	Yes	Yes	No	Yes

```

-----\Federal, State & International Regulations - Part 1\-----
              -SARA 302-      -----SARA 313-----
Ingredient      RQ      TPQ      List  Chemical Catg.
-----
Lactose (63-42-3)      No      No      No      No

```

```

-----\Federal, State & International Regulations - Part 2\-----
              -RCRA-      -TSCA-
Ingredient      CERCLA      261.33      8(d)
-----
Lactose (63-42-3)      No      No      No

```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Label Hazard Warning:

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Label Precautions:

None.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

FLUKA CHEMICAL CORP -- SKIM MILK POWDER FOR MICROBIOLOGY, 70166

=====
MSDS Safety Information
=====

FSC: 6810
MSDS Date: 07/01/1999
MSDS Num: CJRQK
LIIN: 00N092423
Product ID: SKIM MILK POWDER FOR MICROBIOLOGY, 70166
MFN: 01
Responsible Party
Cage: 63181
Name: FLUKA CHEMICAL CORP
Address: 1001 WEST ST PAUL
City: MILWAUKEE WI 53233
Info Phone Number: 414-273-3850
Emergency Phone Number: 414-273-3850
Review Ind: Y
Published: Y

=====
Contractor Summary
=====

Cage: 63181
Name: FLUKA CHEMICAL CORP
Address: 1001 WEST ST PAUL
City: MILWAUKEE WI 53233
Phone: 414-273-3850

=====
Item Description Information
==========
Health Hazards Data
=====

Route Of Entry Inds - Inhalation: NO
Skin: YES
Ingestion: NO
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: HAZARDS IDENTIFICATION: DATA NOT AVAILABLE.
Signs And Symptions Of Overexposure: SEE HEALTH HAZARDS.
First Aid: INGEST: CALL MD IMMEDIATELY (FP N). INHALATION: REMOVE TO FRESH AIR.
SUPPORT BREATHING (GIVE OXYGEN/ARTIFICIAL RESPIRATION) (FP N). SKIN: AFTER
CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF SOAP AND WATER. EYES: IN
CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER FOR AT
LEAST 15 MINUTES AND SEEK MEDICAL ADVICE IF NECESSARY.

=====
Handling and Disposal
=====

Spill Release Procedures: PLACE IN APPROPRIATE CONTAINER.
Waste Disposal Methods: BURY IN A LANDFILL SITE APPROVED FOR THE DISPOSAL OF
CHEMICAL AND HAZARDOUS WASTES. OBSERVE ALL FEDERAL, STATE AND LOCAL
ENVIRONMENTAL REGULATIONS.
Handling And Storage Precautions: KEEP CONTAINER TIGHTLY CLOSED.

=====
Fire and Explosion Hazard Information
=====

Extinguishing Media: WATER SPRAY. CARBON DIOXIDE, DRY CHEMICAL POWDER OR
APPROPRIATE FOAM.
Fire Fighting Procedures: USE NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT

(FP N) TO PREVENT CONTACT WITH SKIN AND EYES.
Unusual Fire/Explosion Hazard: HAZARDOUS POLYMERIZATION WILL NOT OCCUR.
ADDITIONAL INFORMATION: HYGROSCOPIC.

=====
Control Measures
=====

Respiratory Protection: USE NIOSH APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE
OF CONCERN (FP N).

Protective Gloves: IMPERVIOUS GLOVES (FP N).

Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: ANSI APPROVED EYE WASH AND DELUGE SHOWER (FP N).

=====
Physical/Chemical Properties
=====

Solubility in Water: SOLUBLE

Appearance and Odor: SOLID, WHITE.

=====
Reactivity Data
=====

Stability Condition To Avoid: DATA NOT AVAILABLE.

Materials To Avoid: DATA NOT AVAILABLE.

Hazardous Decomposition Products: DATA NOT AVAILABLE.

Hazardous Polymerization Indicator: NO

=====
Toxicological Information
=====

Toxicological Information: DATA NOT AVAILABLE.

=====
Ecological Information
=====

Ecological: DATA NOT YET AVAILABLE.

=====
MSDS Transport Information
=====

Transport Information: CONTACT FLUKA CHEMICAL COMPANY FOR TRANSPORTATION
INFORMATION.

=====
Regulatory Information
=====

Sara Title III Information: DATA NOT AVAILABLE.

Federal Regulatory Information: DATA NOT AVAILABLE.

=====
Other Information
=====

Other Information: COMPOSITION/INFORMATION ON INGREDIENTS: EC NO: 271-045-3.

=====
HAZCOM Label
=====

Product ID: SKIM MILK POWDER FOR MICROBIOLOGY, 70166

Cage: 63181

Company Name: FLUKA CHEMICAL CORP

Street: 1001 WEST ST PAUL

City: MILWAUKEE WI

Zipcode: 53233

Health Emergency Phone: 414-273-3850

Label Required IND: Y

Date Of Label Review: 11/03/1999

Status Code: A

Origination Code: F

Eye Protection IND: YES

Skin Protection IND: YES

Signal Word: NONE

Respiratory Protection IND: YES

Health Hazard: None

Contact Hazard: None

Fire Hazard: None

Reactivity Hazard: None

Hazard And Precautions: HYGROSCOPIC. HAZARDS IDENTIFICATION: DATA NOT AVAILABLE.

=====

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MSDS Number: L1044 * * * * Effective Date: 07/29/03 * * * * Supercedes: 10/23/00



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6668

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

LACTOSE

1. Product Identification

Synonyms: Milk sugar; (beta)-Lactose; D- Glucose, 4-O-(beta)-D-galactopyranosyl- ; (+)-Lactose; D-(+)-Lactose; Lactin; Lactose anhydrous

CAS No.: 63-42-3

Molecular Weight: 342.30

Chemical Formula: C₁₂H₂₂O₁₁

Product Codes: P347

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Lactose	63-42-3	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all

unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 0 - None

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Not expected to be a health hazard via inhalation. Inhalation of high concentrations of dust may irritate the throat.

Ingestion:

Not expected to be a health hazard via ingestion. May produce abdominal irritation if large quantities are consumed.

Skin Contact:

Not expected to be a health hazard from skin exposure. May irritate the skin on some super-sensitive persons.

Eye Contact:

Not expected to be a health hazard. May cause mechanical irritation.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If large amounts were swallowed, give water to drink and get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Lower explosive limit: 0.125 g/l in air.

Fire Extinguishing Media:

Dry chemical, alcohol foam or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a

full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals or white powder.

Odor:

Odorless.

Solubility:

Soluble in water.

Density:

1.525 @ 20C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Decomposes.

Melting Point:

202C (396F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers.

Conditions to Avoid:

No information found.

11. Toxicological Information

LD50 oral, rat = > 10 gm/Kg. Investigated as a tumorigen and a reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Lactose (63-42-3)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Lactose (63-42-3)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Lactose (63-42-3)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Lactose (63-42-3)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Lactose (63-42-3)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Label Hazard Warning:

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Label Precautions:

None.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING
FROM USE OF OR RELIANCE UPON THIS INFORMATION.**

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

FISONS HORTICULTURE INC -- CANADIAN SPHAGNUM PEAT -- 9999-00B060064

===== Product Identification =====

Product ID:CANADIAN SPHAGNUM PEAT
 MSDS Date:08/02/1992
 FSC:9999
 NIIN:00B060064
 MSDS Number: BQQRH
 === Responsible Party ===
 Company Name:FISONS HORTICULTURE INC
 Address:110-110TH AVENUE NE, SUITE 490
 City:BELLEVUE
 State:WA
 ZIP:98004
 Country:US
 Emergency Phone Num:914-986-8870
 CAGE:FISON
 === Contractor Identification ===
 Company Name:FISONS HORTICULTURE INC
 Address:110-110TH AVENUE NE, SUITE 490
 Box:City:BELLEVUE
 State:WA
 ZIP:98004
 Country:US
 CAGE:FISON

===== Composition/Information on Ingredients =====

Ingred Name:NO INGREDIENT FOR THIS FORMULATION_INGREDIENT

===== Hazards Identification =====

LD50 LC50 Mixture:5MG/M3
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:NUISANCE DUST. INHALATION OVER LONG PERIODS OF HIGH AMOUNTS OF ANY NUISANCE DUST MAY OVERLOAD LUNG CLEARANCE MECHANISM, IRRITATE MUCCOUS MEMBRANE AND MAKE LUNGS MORE VULNERABLE TO RESPIRATORY DISEASE.
 Explanation of Carcinogenicity:THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.
 Effects of Overexposure:MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE EYE IRRITATION.
 Medical Cond Aggravated by Exposure:OPEN WOUNDS.

===== First Aid Measures =====

First Aid:IF INHALED, PROVIDE FRESH AIR. IF EYE IRRITATION OCCURS, FLUSH WITH WATER. KEEP OPEN WOUNDS COVERED AND CLEAN AS SUGGESTED BY AN GOOD PROGRAM OF HYGIENE.

===== Fire Fighting Measures =====

Flash Point:NA
 Lower Limits:NA
 Upper Limits:NA
 Extinguishing Media:USE WATER FOG, CARBON DIOXIDE, FOAM, OR DRY

CHEMICAL.

Fire Fighting Procedures:CAUTION, BURNING MAY CONTINUE INSIDE BAGS OR PILES AFTER SURFACE FIRE IS OUT. BREAK BAGS OR SEPARATE PILE TO ASSURE THAT FIRE IS EXTINGUISHED.

Unusual Fire/Explosion Hazard:THE THERMAL DECOMPOSITION PRODUCTS ARE THOSE COMMONLY OBSERVED WITH NATURAL PRODUCTS SUCH AS WOOD OR OTHER VEGETABLE MATTER.

===== Accidental Release Measures =====

Spill Release Procedures:USE METHODS TO CLEAN SPILL WHICH AVOID CREATING AIRBORNE DUST. REMOVE FOR DISPOSAL OR INCORPORATION INTO SOIL OR GARDEN.

===== Handling and Storage =====

Handling and Storage Precautions:NA

Other Precautions:NONE

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF DUST IS CREATED, WEAR A NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:LOCAL AND MECHANICAL(GENERAL) EXHAUST TO PROVIDE ADEQUATE VENTILATION.

Protective Gloves:SUGGESTED IN CASE OF OPEN WOUNDS.

Eye Protection:SAFETY GLASSES WHERE DUST LEVELS HIGH

Other Protective Equipment:NORMAL WORK CLOTHING.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING OR SMOKING.

Supplemental Safety and Health

PROPER PRECAUTIONS ARE ADVISED TO PREVENT INFECTION OF OPEN WOUNDS, INHALATION OF EXCESSIVE AMOUNTS OF DUST AND EYE IRRITATION.

===== Physical/Chemical Properties =====

HCC:N1

Boiling Pt:B.P. Text:NA

Melt/Freeze Pt:M.P/F.P Text:NA

Vapor Pres:NA

Vapor Density:NA

Spec Gravity:0.15 G/CC

pH:NA

Evaporation Rate & Reference:NA

Solubility in Water:NEGLIGIBLE

Appearance and Odor:BROWN, FIBROUS, EARTHY ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

NONE

Stability Condition to Avoid:NONE

Hazardous Decomposition Products:NA

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL OF WASTE SHALL COMPLY WITH LOCAL, STATE AND FEDERAL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies):

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Material Safety Data Sheet

Pectin, Pract.

ACC# 64240

Section 1 - Chemical Product and Company Identification

MSDS Name: Pectin, Pract.**Catalog Numbers:** AC416860000, AC416860010, AC416862500**Synonyms:** None**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9000-69-5	Pectin	ca. 100%	232-553-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white to off-white solid.

Caution! This is expected to be a low hazard for usual industrial handling.**Target Organs:** None.**Potential Health Effects****Eye:** Dust may cause mechanical irritation.**Skin:** May cause mild skin irritation.**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation. Low hazard for usual industrial handling.**Inhalation:** Low hazard for usual industrial handling. Excessive inhalation may cause minor respiratory irritation.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give

artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Runoff from fire control or dilution water may cause pollution.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Avoid prolonged or repeated contact with skin.

Storage: Keep container closed when not in use. No special precautions indicated.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Pectin	none listed	none listed	none listed

OSHA Vacated PELs: Pectin: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear safety glasses with side shields.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white to off-white

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: Not available.

Decomposition Temperature: Not available.

Solubility: Slightly soluble in water.

Specific Gravity/Density: Not available.

Molecular Formula: Not applicable.

Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable.

Conditions to Avoid: None reported.

Incompatibilities with Other Materials: No data reported.

Hazardous Decomposition Products: Irritating and toxic fumes and gases.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 9000-69-5: RX4280000

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 9000-69-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 9000-69-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9000-69-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:****WGK (Water Danger/Protection)**

CAS# 9000-69-5: 0

Canada - DSL/NDSL

CAS# 9000-69-5 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #5 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

MSDS Number: S6506 * * * * * Effective Date: 08/10/04 * * * * * Supersedes: 11/02/01

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-850-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 619-496-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

STARCH SOLUBLE

1. Product Identification

Synonyms: Amglogen; Amylodextrin; Potato starch

CAS No.: 9005-84-9

Molecular Weight: Not applicable to mixtures.

Chemical Formula: (C₆H₁₀O₅)_x

Product Codes:

J.T. Baker: 4006, 4010

Mallinckrodt: 8188

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Starch Soluble	9005-84-9	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Symptoms similar to those caused by nuisance dust; coughing, sneezing.

Ingestion:

Not expected to be a health hazard.

Skin Contact:

No adverse effects expected.

Eye Contact:

No adverse effects expected but dust may cause mechanical irritation.

Chronic Exposure:

No adverse effects expected.

Aggravation of Pre-existing Conditions:

Persons with respiratory impairment may be sensitive to starch dust.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If large amounts were swallowed, give water to drink and get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

Autoignition temperature: > 380C (> 716F)

Combustible solid.

Minimum ignition energy > 30 m (Depends on particle size, moisture content, etc.) Contact with strong oxidizers may cause fire.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum ignition temperature, cloud: 430C (806F).

Fire Extinguishing Media:

If involved in a fire, use water spray.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product. Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

15 mg/m³ total dust, 5 mg/m³ respirable fraction

-ACGIH Threshold Limit Value (TLV):

10 mg/m³ total dust containing no asbestos and < 1% crystalline silica

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White, amorphous powder or granules.

Odor:

Slight characteristic odor.

Solubility:

Dispersible in hot water.

Specific Gravity:

ca. 1.5

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Not applicable.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Heavy, black acrid smoke.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Starch Soluble (9005-84-9)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC   Japan  Australia
-----
Starch Soluble (9005-84-9)              Yes   Yes   No     Yes
    
```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                               --Canada--
Korea  DSL   NDSL  Phil.
-----
Starch Soluble (9005-84-9)              Yes   Yes   No     Yes
    
```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -SARA 313-
RQ    TPQ    List  Chemical Catg.
-----
Starch Soluble (9005-84-9)              No     No     No     No
    
```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               -RCRA-      -TSCA-
CERCLA  261.33  8 (d)
-----
Starch Soluble (9005-84-9)              No         No         No
    
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 2 Reactivity: 0

Label Hazard Warning:

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Label Precautions:

None.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

ICN BIOCHEMICALS -- SUCROSE, 102977

=====
MSDS Safety Information
=====

FSC: 6810
MSDS Date: 09/09/1997
MSDS Num: CJRMK
LIIN: 00N092318
Product ID: SUCROSE, 102977
MFN: 01
Responsible Party
Cage: 1H1H0
Name: ICN BIOCHEMICALS
Address: 1263 S CHILLICOTHE ROAD
City: AURORA OH 44202
Info Phone Number: 330-562-1500
Emergency Phone Number: 800-424-8802
Chemtrec IND/Phone: (800)424-9300
Review Ind: Y
Published: Y

=====
Contractor Summary
=====

Cage: 1H1H0
Name: ICN BIOCHEMICALS
Address: 1263 S CHILLICOTHE ROAD
City: AURORA OH 44202
Phone: 330-562-1500

=====
Item Description Information
=====

=====
Ingredients
=====

Cas: 57-50-1
RTECS #: WN6500000
Name: SUCROSE
Other REC Limits: N/K (FP N)
OSHA PEL: 15 MG/M3
OSHA STEL: N/K (FP N)
ACGIH TLV: 10 MG/M3
ACGIH STEL: N/K (FP N)

=====
Health Hazards Data
=====

LD50 LC50 Mixture: SEE TOXICOLOGICAL INFORMATION.
Route Of Entry Inds - Inhalation: YES
Skin: NO
Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: AN EXPERIMENTAL TERATOGEN. ESSENTIALLY NON-TOXIC.
DIABETICS NEED TO HANDLE WITH CAUTION.
Signs And Symptoms Of Overexposure: MAY INCLUDE NAUSEA, VOMITING, HEADACHE.
First Aid: SKIN: REMOVE CONTAMINATED CLOTHING AND RINSE WITH COPIOUS AMOUNTS OF SOAP AND WATER FOR A CONSIDERABLE AMOUNT OF TIME. NOT HAZARDOUS. INGESTION: DRINK 1 OR 2 GLASSES OF WATER WITHIN 15 MINUTES. DIABET ICS NEED TO CONSULT A DOCTOR. EYES: RINSE LIBERALLY WITH WATER FOR AT LEAST 15 MINUTES. NOT HAZARDOUS. INHALATION: TAKE PATIENT INTO THE FRESH AIR AND ALLOW TO REST.

ADDITIONAL INSTRUCTIONS: OBSERVE P ROPEL LABORATORY PROCEDURES WHEN HANDLING MATERIAL.

=====
Handling and Disposal
=====

Spill Release Procedures: SWEEP INTO SUITABLE CONTAINER FOR DISPOSAL.

Waste Disposal Methods: INCINERATE OR LANDFILL AS COMPLIES WITH STATE AND LOCAL LAWS. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS (FP N).

Handling And Storage Precautions: STORE AT ROOM TEMPERATURE. ALWAYS WEAR GLOVES, MASK, GOGGLES OR OTHER PROTECTIVE CLOTHING AND USE A HOOD. FOLLOW PROPER LABORATORY PROCEDURES.

=====
Fire and Explosion Hazard Information
=====

Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL, OR FOAM.

Fire Fighting Procedures: WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire/Explosion Hazard: NO UNUSUAL HAZARD.

=====
Control Measures
=====

Respiratory Protection: YES. WEAR NIOSH APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).

Ventilation: A LOCAL EXHAUST SYSTEM IS REQUIRED WHEN THE SUBSTANCE IS USED FOR ITS NORMAL PURPOSE.

Protective Gloves: YES. WEAR IMPERVIOUS GLOVES (FP N).

Eye Protection: YES. ANSI APPROVED CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: EYEWASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N).

=====
Physical/Chemical Properties
=====

Melt/Freeze Pt: >170.C, 338.F

M.P/F.P Text: 170C - 186C

Spec Gravity: 1.587 G/ML

Solubility in Water: SOLUBLE

Appearance and Odor: WHITE CRYSTALLINE POWDER.

=====
Reactivity Data
=====

Stability Indicator: YES

Materials To Avoid: STRONG OXIDIZING AGENTS. VIGOROUS REACTION WITH NITRIC ACID OR SULFURIC ACID (FORMS CARBON MONOXIDE AND CARBON DIOXIDE).

Hazardous Decomposition Products: ACRID SMOKE AND IRRITATING FUMES. CARBON MONOXIDE AND CARBON DIOXIDE.

Hazardous Polymerization Indicator: NO

=====
Toxicological Information
=====

Toxicological Information: ORL-RAT LD50: 29700 MG/KG. MMA-SAT: 600 UG/PLATE.

ORL-MAN TDLO: 54810 MG/KG (15-35 D PREG): TER. IPR-MUS LD50: 14000 MG/KG.

=====
Ecological Information
=====

=====
MSDS Transport Information
=====

Transport Information: UN #: NONE.
=====

Regulatory Information

=====
Sara Title III Information: SARA 302: NO.
SARA 313: NO. REFER TO 40 CFR PART 355 FOR SECTION 302 AND 40 CFR PART 372 FOR
SECTION 313 OF TITLE III.
Federal Regulatory Information: TSCA (TOXIC SUBSTANCE CONTROL ACT): LISTED. W
#: NC.
=====

Other Information

=====
Other Information: SYNONYMS: SUGAR;
&-D-GLUCOPYRANOSYL-B-D-FRUCTOFURANOSIDE. CHEMICAL FORMULA/COMPOSITION:
C*12H*22O*11. NFPA RATING SYSTEM: HEALTH=0; FLAMMABILITY=0; REACTIVITY=0;
SPECIAL NOTICE=S/N. HAZARD RATINGS: 4= SEVERE; 3=SERIOUS; 2=MODERATE;
1=SLIGHT; 0=MINIMAL; -=UNKNOWN
=====

HAZCOM Label

=====
Product ID: SUCROSE, 102977
Cage: 1H1H0
Company Name: ICN BIOCHEMICALS
Street: 1263 S CHILLICOTHE ROAD
City: AURORA OH
Zipcode: 44202
Health Emergency Phone: 800-424-8802
Label Required IND: Y
Date Of Label Review: 09/25/1999
Status Code: A
Origination Code: F
Chronic Hazard IND: Y
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: WARNING
Respiratory Protection IND: YES
Health Hazard: Moderate
Contact Hazard: Slight
Fire Hazard: None
Reactivity Hazard: None
Hazard And Precautions: ACUTE: SIGNS AND SYMPTOMS MAY INCLUDE NAUSEA, VOMITING,
HEADACHE. ESSENTIALLY NON-TOXIC. DIABETICS NEED TO HANDLE WITH CAUTION.
CHRONIC: AN EXPERIMENTAL TERATOGEN.
=====

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and assume responsibility for the suitability of this information to their
particular situation regardless of similarity to a corresponding Department
of Defense or other government situation.

AMSTAR SUGAR CORPORATION -- DOMINO CONFECTIONER'S 10X SUGAR -- 8925-00N018287

===== Product Identification =====

Product ID:DOMINO CONFECTIONER'S 10X SUGAR

MSDS Date:01/20/1989

FSC:8925

NIIN:00N018287

MSDS Number: BLXTQ

=== Responsible Party ===

Company Name:AMSTAR SUGAR CORPORATION

Address:1251 AVE OF THE AMERICAS

City:NEW YORK

State:NY

ZIP:10020

Country:US

Info Phone Num:212-489-9000

Emergency Phone Num:212-489-9000

CAGE:54248

=== Contractor Identification ===

Company Name:AMSTAR SUGAR CORPORATION

Address:1251 AVE OF THE AMERICAS

Box:City:NEW YORK

State:NY

ZIP:10020

Country:US

Phone:212-489-9000

CAGE:54248

===== Composition/Information on Ingredients =====

Ingred Name:SUCROSE; (GRANULATED SUGAR)

CAS:57-50-1

RTECS #:WN6500000

Fraction by Wt: 97%

OSHA PEL:15 MG/M3 TDUST

ACGIH TLV:10 MG/M3

Ingred Name:POLYSACCHARIDE (CONSISTING OF AMYLOPECTIN & AMYLASE
MODIFIED FOOD GRADE CORN STARCH)

CAS:9005-84-9

Fraction by Wt: 3%

ACGIH TLV:10 MG/M3 (MFR)

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:NUISANCE DUST, EXCEPTED AS INDICATED.
OVEREXPOSURE MAY IRRITATE EYES, NOSE, THROAT &/OR LUNGS. CONTINUED
OVEREXPOSURE MAY LEAD TO INCREASED SENSITIVITY, WHICH IS
REVERSIBLE.

Explanation of Carcinogenicity:NOT RELEVANT.

Effects of Overexposure:SEE HEALTH HAZARDS.

Medical Cond Aggravated by Exposure:ANY PRE-EXISTING UPPER RESPIRATORY
AILMENT OR ALLERGIC SENSITIVITY.

===== First Aid Measures =====

First Aid:EYE:FLUSH W/WATER FOR AT LEAST 15 MINUTES. INHAL:PROVIDE ADEQUATE VENTILATION, E.G. FRESH AIR. IN CASE OF RESPIRATORY DIFFICULTY, GET MD IMMEDIATELY. SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N). INGEST:CALL MD IMMEDIATELY .

===== Fire Fighting Measures =====

Extinguishing Media:WATER. SUGAR IS A CLASS A COMBUSTIBLE MATERIAL. Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT . TREAT AS CLASS A FIRE; USE WATER SPRAY OR FOG IN DUSTY AREAS.

Unusual Fire/Explosion Hazard:SUGAR DUST HAS A CLOUD IGNITION TEMPERATURE OF 367 F (186 C). IT IS EXPLOSIVE IN AIRBORNE CONCENTRATIONS OF 0.045 OZ/FT3 (45 G/M3) OR HIGHER.

===== Accidental Release Measures =====

Spill Release Procedures:NO SPECIAL REQUIREMENTS.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP AREA WELL VENTILATED & FREE OF SUGAR DUST, ESPECIALLY ON OVERHEAD SURFACES. AVOID OPEN FLAME, SPARKS & OTHER IGNITION SOURCES.

Other Precautions:DUST COLLECTION SYSTEMS SHOULD BE PROVIDED W/EXPLOSION VENTING & AUTOMATIC FIRE PROTECTION.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED DUST RESPIRATOR IN DUSTY AREAS.

Ventilation:LOCAL EXHAUST & MECHANICAL (GENERAL) ARE RECOMMENDED.

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:NOT REQUIRED.

Work Hygienic Practices:GOOD HOUSEKEEPING PRACTICES TO MINIMIZE DUST ACCUMULATIONS.

Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:N1

Melt/Freeze Pt:M.P/F.P Text:367F,186C

Spec Gravity:1.55

pH:6.7

Solubility in Water:SOLUBLE

Appearance and Odor:WHITE POWDER; ODORLESS TO SLIGHT TYPICAL MILLED CORN STARCH.

Percent Volatiles by Volume:0.5 WT

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
NONE.

Stability Condition to Avoid:TEMPERATURE IN EXCESS OF 367 F WILL CAUSE SUCROSE TO MELT W/DECOMPOSITON.

Hazardous Decomposition Products:NONE UNDER NORMAL STORAGE CONDITIONS.

===== Disposal Considerations =====

Waste Disposal Methods:NO SPECIAL REQUIREMENTS. DISPOSAL MUST BE IN
ACCORDANCE WITH FEDERAL, STATE & LOCAL REGULATIONS .

Disclaimer (provided with this information by the compiling agencies):
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assume responsibility for the suitability of this information to their
particular situation.

COMPOSITION MATERIALS COMPANY, INC. -- WALNUT SHELL -- 5350-00-050-1094

===== Product Identification =====

Product ID:WALNUT SHELL
 MSDS Date:06/18/1997
 FSC:5350
 NIIN:00-050-1094
 MSDS Number: CDXPR
 === Responsible Party ===
 Company Name:COMPOSITION MATERIALS COMPANY, INC.
 Address:1375 KINGS HIGHWAY EAST
 City:FAIRFIELD
 State:CT
 ZIP:06430
 Country:US
 Info Phone Num:203-384-6111
 Emergency Phone Num:203-286-1234
 CAGE:98231
 === Contractor Identification ===
 Company Name:COMPOSITION MATERIALS CO INC
 Address:1375 KINGS HIGHWAY EAST
 Box:City:FAIRFIELD
 State:CT
 ZIP:06430
 Country:US
 Phone:203-384-6111
 CAGE:98231

===== Composition/Information on Ingredients =====

Ingred Name:NON-HAZARDOUS INGREDIENTS
 Other REC Limits:NONE RECOMMENDED
 OSHA PEL:NOT RELEVANT
 ACGIH TLV:NOT RELEVANT

===== Hazards Identification =====

Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:NA

===== Fire Fighting Measures =====

Flash Point:380F,193C
 Autoignition Temp:Autoignition Temp Text:470F
 Extinguishing Media:WATER
 Fire Fighting Procedures:NONE
 Unusual Fire/Explosion Hazard:NONE

===== Accidental Release Measures =====

Spill Release Procedures:NO PROBLEM, TREAT AS ANY NON-HAZARDOUS
 MATERIAL.

===== Handling and Storage =====

Handling and Storage Precautions:TREAT AS ORDINARY NON-HAZARDOUS
 MATERIAL.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NA
Supplemental Safety and Health
NK

=====
Physical/Chemical Properties
=====

Boiling Pt:B.P. Text:NA
Vapor Pres:NA
Vapor Density:NA
Spec Gravity:1.2
Evaporation Rate & Reference:NA
Solubility in Water:NA
Appearance and Odor:LIGHT BROWN IN COLOR, NO ODOR
Percent Volatiles by Volume:NA

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES
NONE
Stability Condition to Avoid:NONE
Hazardous Decomposition Products:NONE

Disclaimer (provided with this information by the compiling agencies):
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of Defense. The United States of America in no manner whatsoever,
expressly or implied, warrants this information to be accurate and
disclaims all liability for its use. Any person utilizing this
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assume responsibility for the suitability of this information to their
particular situation.

BECTON DICKINSON MICROBIOLOGY SYSTEMS -- M-TRYPTONE GLUCOSE YEAST -- 6550-00F015675

=====
 ===== Product Identification =====
 =====

Product ID:M-TRYPTONE GLUCOSE YEAST

MSDS Date:04/05/1988

FSC:6550

NIIN:00F015675

MSDS Number: BKDTR

=== Responsible Party ===

Company Name:BECTON DICKINSON MICROBIOLOGY SYSTEMS

Address:250 SCHILLING CIRCLE

City:COCKEYSVILLE

State:MD

ZIP:21030

Info Phone Num:(301) 771-0100

Emergency Phone Num:(301) 584-7169

Preparer's Name:DALE M. OREM

CAGE:06531

=== Contractor Identification ===

Company Name:BECTON DICKINSON AND CO MICROBIOLOGY SYSTEMS DIV

Address:250 SCHILLING CIRCLE

Box:City:HUNT VALLEY

State:MD

ZIP:21030-1103

Country:US

Phone:410-771-0101

CAGE:05545

Company Name:BECTON DICKINSON AND CO, BECTON DICKINSON DIV.

Address:1 BECTON DR

City:FRANKLIN LAKES

State:NJ

ZIP:07417-1884

Country:US

Phone:201-847-4000, 800-333-4831

CAGE:06531

=====
 ===== Composition/Information on Ingredients =====
 =====

Ingred Name:NON-HAZARDOUS FOR INGREDIENTS

=====
 ===== Hazards Identification =====
 =====

Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Explanation of Carcinogenicity:NONE

=====
 ===== Fire Fighting Measures =====
 =====

Extinguishing Media:WATERSPRAY

Unusual Fire/Explosion Hazard:ANY ORGANIC POWDER CAN BE POTENTIALLY
 EXPLOSIVE IF DISBURSED IN AIR IN CERTAIN CONCENTRATIONS. THESE
 CONCENTRATIONS HAVE NOT BEEN DETERMINED.

=====
 ===== Accidental Release Measures =====
 =====

Spill Release Procedures:SWEEP UP.

=====
===== Handling and Storage =====

Other Precautions:USE OF THIS PRODUCT IN ACCORDANCE W/MANUFACTURER'S INSTRUCTIONS SHOULD NOT RESULT IN EXPLOSIVE MIXTURES BEING FORMED.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:AS REQUIRED
Ventilation:AS REQUIRED
Protective Gloves:AS REQUIRED
Eye Protection:SAFETY GLASSES, FACE SHIELD
Other Protective Equipment:AS REQUIRED
Work Hygienic Practices:PRACTICE GOOD PERSONAL HYGIENE.
Supplemental Safety and Health

=====
===== Physical/Chemical Properties =====

Solubility in Water:COMPLETE
Appearance and Odor:LIGHT TAN BROWN POWDER.

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

=====
===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF W/NORMAL LABORATORY TRASH. FOLLOW ALL FEDERAL, STATE, & LOCAL REGULATIONS.

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MSDS Number: A0012 * * * * * Effective Date: 08/10/04 * * * * * Supercedes: 11/02/01



From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-8666

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ACACIA POWDER

1. Product Identification

Synonyms: Gum acacia; Gum arabic; acacia gum; Indian gum
CAS No.: 9000-01-5
Molecular Weight: Not applicable to mixtures.
Chemical Formula: Not available.
Product Codes: 0430

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Gum Arabic	9000-01-5	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! MAY BE HARMFUL IF SWALLOWED OR INHALED. CAUSES SEVERE EYE IRRITATION. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY

REACTION. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.**J.T. Baker SAF-T-DATA^(tm)** Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)
-----**Potential Health Effects**
-----**Inhalation:**

A weak allergen. Inhalation of dust may cause respiratory symptoms such as asthma, watery nose and eyes, cough and wheezing. Hives, eczema, and swelling may also occur.

Ingestion:

Considered non-toxic, but sensitive individuals may develop symptoms paralleling those from inhalation exposure.

Skin Contact:

May cause allergic reaction in sensitive individuals.

Eye Contact:

May cause severe irritation, redness, pain.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

-----**4. First Aid Measures****Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If swallowed, give several glasses of water to drink to dilute. If large amounts were swallowed or symptoms occur, get medical advice. Never give anything by mouth to an unconscious person.

Skin Contact:

Immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Combustible dust.

Minimum dust cloud ignition temperature:

500C (932F).

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosible concentration: 0.06 g/l (air) Maximum explosion pressure: 117 lb./sq. in.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Pressure from the extinguishing media may cause severe dusting.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of*

Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

Allergic responses in sensitive individuals will disappear if removed from exposure.

9. Physical and Chemical Properties

Appearance:

White to tan solid.

Odor:

Odorless.

Solubility:

Soluble in water.

Density:

1.35 - 1.49

pH:

4.5-5.5 Slightly acidic (aqueous solution).

% Volatiles by volume @ 21C (70F):

No information found.

Boiling Point:

No information found.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Oxidizing agents. Precipitates or jellies result upon addition of solutions of ferric salts, borax, lead subacetate, alcohol, sodium silicate, gelatin, ammoniated tincture of guaiac.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: > 16 g/kg. Irritation eye rabbit (std Draize): 36 mg/5H, severe. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Gum Arabic (9000-01-5)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Gum Arabic (9000-01-5)                       Yes  Yes   No     Yes

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Gum Arabic (9000-01-5)                       Yes   Yes   No     Yes

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-----
RQ   TPQ   List  Chemical Catg.
-----
Gum Arabic (9000-01-5)                       No    No    No     No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
261.33  8 (d)
-----
Gum Arabic (9000-01-5)                       No      No      No

```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! MAY BE HARMFUL IF SWALLOWED OR INHALED. CAUSES SEVERE EYE IRRITATION. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

Label Precautions:

Do not breathe dust.
 Avoid contact with eyes, skin and clothing.
 Keep container closed.
 Wash thoroughly after handling.

Use only with adequate ventilation.
Avoid dust cloud in presence of an ignition source.
Store in a tightly closed container.

Label First Aid:

In case of skin contact, immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. If swallowed, give several glasses of water to drink to dilute. If large amounts were swallowed or symptoms occur, get medical advice. Never give anything by mouth to an unconscious person.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSDS LIST

PREVIOUS MSDS

NEW MSDS

MSDS**MATERIAL SAFETY DATA SHEET****SECTION 1. PRODUCT AND COMPANY IDENTIFICATION
SAND CLEAR**

PRODUCT CODE: F-SAND CLEAR, REFERENCE #: 10220

PRODUCT NAME: SAND CLEAR CHEMICAL FAMILY: Natural carbohydrate material

SYNONYMS

Psyllium Seed Husk, Flea Seed, Plantago, active ingredient in Metamucil

**MANUFACTURER NAME AND
ADDRESS:**

Farnam Companies, Inc.

301 West Osborn Road

Phoenix, AZ. 85013

**TELEPHONE
NUMBERS:**24 hour emergency
number

(602)285-1660

Business hours

(602)285-1660

Marketing

(602)285-1660

DATES:Date Created:
08/31/1995Revision:
04/26/2001

Printed: 01/12/2005

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS
SAND CLEAR**

HAZARDOUS COMPONENTS (CHEMICAL NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
1. FEED GRADE INGREDIENTS	NA				100.0 %

**SECTION 3. HAZARDS IDENTIFICATION
SAND CLEAR****EMERGENCY OVERVIEW**

ROUTE(S) OF ENTRY: Inhalation? Yes , Skin? Yes , Eyes? Yes , Ingestion? Yes

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

CARCINOGENICITY: NTP? , IARC Monographs? , OSHA Regulated?

CARCINOGENICITY/OTHER INFORMATION

SIGNS AND SYMPTOMS OF EXPOSURE

May cause mechanical eye irritation unless rinsed immediately with water. Single prolonged skin exposure (hours) causes no effect. Repeated prolonged exposures may or may not cause skin irritation. Prolonged or repeated exposure may result in respiratory sensitization in some individuals. Amounts which may be swallowed as a result of industrial handling are not likely to cause injury.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

SECTION 4. FIRST AID MEASURES SAND CLEAR

EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush eye with water for 15 minutes. Get medical attention if irritation persists.

NOTE TO PHYSICIAN

SECTION 5. FIRE FIGHTING MEASURES SAND CLEAR

FLASH PT: N.A. METHOD USED:

EXPLOSIVE LIMITS: LEL: UEL:

AUTOIGNITION PT: N.A. EXTINGUISHING MEDIA

Foam, carbon dioxide, and dry chemical

FIRE FIGHTING INSTRUCTIONS

Avoid dispersion of dust in air to reduce potential explosion hazard. Containers can build up pressure if exposed to heat (fire). Cool fire exposed containers with water.

FLAMMABLE PROPERTIES AND HAZARDS

Combustible dust (class ST2). K = 196 bar m/s Pmax = 12.5 bar

HAZARDOUS COMBUSTION PRODUCTS

SECTION 6. ACCIDENTAL RELEASE MEASURES SAND CLEAR

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Vacuum or sweep up material and place in disposal container. ~~The very fine particles can cause a fire or explosion, eliminate all ignition sources. (Steam or air blowing are not to be used for clean up purposes.)~~

SECTION 7. HANDLING AND STORAGE SAND CLEAR

HAZARD LABEL INFORMATION:

Store upright in cool, dry place Use only in a well ventilated area.

Do not use/store near heat/open flame Provide adequate ventilation

PRECAUTIONS TO BE TAKEN IN HANDLING

Avoid breathing dust. Do not use near fire, sparks or flame. Store away from heat, sparks & flames. Store upright in cool, dry place.

PRECAUTIONS TO BE TAKEN IN STORING

OTHER PRECAUTIONS

Exposure to concentrations of visible dust require the use of an air purifying respirator approved by NIOSH/MSHA for dusts. Restiratory protection is required for cleanup or maintenance operations where visible dust levels may be encountered.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION SAND CLEAR

RESPIRATORY EQUIPMENT (SPECIFY TYPE)

Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH/MSHA respirator approved for dusts.

EYE PROTECTION

Safety glasses

PROTECTIVE GLOVES

Not needed

OTHER PROTECTIVE CLOTHING

Protective clothing not needed for normal operation.

ENGINEERING CONTROLS (VENTILATION ETC.)

Good general ventilation should be sufficient to control airborne levels.

WORK/HYGIENIC/MAINTENANCE PRACTICES

Wash hands before eating, smoking, or using restroom.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES SAND CLEAR

PHYSICAL STATES:

Gas , Liquid , Solid

BOILING POINT:

N.A.

MELTING POINT:

N.A.

SPECIFIC GRAVITY (WATER = 1):

VAPOR PRESSURE (VS. AIR OR MM HG):

VAPOR DENSITY (VS. AIR = 1):

EVAPORATION RATE (VS BUTYL ACETATE=1):

SOLUBILITY IN WATER:

PERCENT VOLATILE:

N.A.

PH:

APPEARANCE AND ODOR

Brown fine crumbles with slight apple odor.

SECTION 10. STABILITY AND REACTIVITY SAND CLEAR

STABILITY: Unstable Stable

CONDITIONS TO AVOID - INSTABILITY

None known

INCOMPATIBILITY - MATERIALS TO AVOID

None known

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

HAZARDOUS POLYMERIZATION: Will occur Will not occur

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION

Product will not undergo polymerization.

SECTION 11. TOXICOLOGICAL INFORMATION SAND CLEAR

**SECTION 12. ECOLOGICAL INFORMATION
SAND CLEAR**

**SECTION 13. DISPOSAL CONSIDERATIONS
SAND CLEAR**

WASTE DISPOSAL METHOD

Dispose of according to local, State, and Federal regulations.

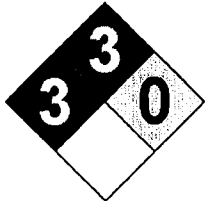
**SECTION 14. TRANSPORT INFORMATION
SAND CLEAR**

DOT PROPER SHIPPING NAME

ADDITIONAL TRANSPORT INFORMATION

**SECTION 15. REGULATORY INFORMATION
SAND CLEAR**

**SECTION 16. OTHER INFORMATION
SAND CLEAR**

NFPA HAZARD RATINGS:			Minimal: 0
Health:	3		Slight: 1
Flammability:	3		Moderate: 2
Instability:	0		Serious: 3
Special Hazard:			Extreme: 4

The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification.

ALUMINUM CO OF AMERICA -- ATOMIZED ALUMINUM POWDER -- 6810-00-628-3383

===== Product Identification =====

Product ID:ATOMIZED ALUMINUM POWDER
 MSDS Date:02/20/1997
 FSC:6810
 NIIN:00-628-3383
 MSDS Number: CDVLT
 === Responsible Party ===
 Company Name:ALUMINUM CO OF AMERICA
 Address:HWY 79
 Box:472
 City:ROCKDALE-FORMERLY IN PITTSBURG, PA
 State:TX
 ZIP:76567
 Country:US
 Info Phone Num:512-446-8461
 Emergency Phone Num:512-446-8461
 CAGE:01634

=== Contractor Identification ===

Company Name:ALUMINUM CO OF AMERICA
 Address:HWY 79
 Box:472
 City:ROCKDALE-FORMERLY IN PITTSBURG, PA
 State:TX
 ZIP:76567
 Country:US
 Phone:512-446-8461
 CAGE:01634
 Company Name:BARTLETT CHEMICALS
 Address:4955 RIVER ROAD
 Box:10710
 City:JEFFERSON
 State:LA
 ZIP:70121
 Country:US
 Phone:504-734-1971
 CAGE:1V771

===== Composition/Information on Ingredients =====

Ingred Name:ALUMINUM (SARA 313)
 CAS:7429-90-5
 RTECS #:BD0330000
 Fraction by Wt: 97%
 Other REC Limits:NONE RECOMMENDED
 OSHA PEL:15 MG/M3 DUST
 ACGIH TLV:10 MG/M3 DUST; 9596

===== Hazards Identification =====

LD50 LC50 Mixture:NOT GIVEN
 Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:DUST CAN CAUSE EYE, SKIN AND
 RESPIRATORY TRACT IRRITATION. ALUMINUM DUST/FINES AND FUMES ARE A
 LOW HEALTH RISK BY INHALATION AND SHOULD BE TREATED AS A NUISANCE
 DUST AS DEFINED BY ACGIH.

Explanation of Carcinogenicity:THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.

Effects of Overexposure:EYE IRRITATION, SKIN IRRITATION, RESPIRATORY TRACT IRRITATION.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

=====
First Aid Measures
=====

First Aid:INHALATION: IF SYMPTOMATIC, MOVE TO FRESH AIR. GET MEDICAL ATTENTION IF SYMPTOMS PERSIST. EYES: WASH OUT IMMEDIATELY WITH WATER. GET MEDICAL ATTENTION IF SYMPTOMS OCCUR. SKIN: WASH WITH SOAP AND WATER . GET MEDICAL ATTENTION IF SYMPTOMS OCCUR. INGESTION: DRINK 1-2 GLASSES OF WATER. SEEK MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. DO NOT INDUCE VOMITING.

=====
Fire Fighting Measures
=====

Flash Point:COMBUSTIBLESOLID
Autoignition Temp:Autoignition Temp Text:650C
Lower Limits:40 MG/L
Upper Limits:NOT GIVEN
Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL
Fire Fighting Procedures:IF POSSIBLE ISOLATE THE BURNING POWDER FROM OTHER MATERIALS TO PREVENT FIRE SPREAD AND ALLOW THE MATERIAL TO BURN ITSELF OUT. DO NOT DISTURB THE POWDER TIL COOL
Unusual Fire/Explosion Hazard:FIRE FIGHTERS SHOULD WEAR NIOSH APPROVED, POSITIVE PRESSURE, SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR WHEN APPROPRIATE.

=====
Accidental Release Measures
=====

Spill Release Procedures:AVOID ALL IGNITION SOURCES AROUND SPILL AREA. PROHIBIT SMOKING. DO NOT USE WATER FOR SPILL CLEANUP. AVOID DUSTING OF POWDER. SWEEP SPILLED POWDER WITH NATURAL BRISTLE BROOM(BRUSH TYPE RECOMMENDED.) PICK UP MATERIAL WITH NONSPARKING TOOLS.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:KEEP ABSOLUTELY DRY. STORAGE ROOMS MUST BE FIRE-RESISTANT. DO NOT STORE POWDER IN SAME ROOM AS OTHER COMBUSTIBLES. PROHIBIT SMOKING.
Other Precautions:COVER AND RESEAL PARTIALLY EMPTY CONTAINERS. PROVIDE GROUNDING AND BONDING WHERE NECESSARY TO PREVENT ACCUMULATION OF STATIC CHARGES DURING ALUMINUM DUST HANDLING AND TRANSFER OPERATIONS. REFER TO NFP A 77.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NIOSH-APPROVED DUST RESPIRATOR IF OVEREXPOSURE POTENTIAL EXISTS.
Ventilation:GOOD GENERAL VENTILATION, TYPICALLY 10 AIR CHANGES PER HOUR, SHOULD BE USED. RATES SHOULD MATCH CONDITIONS.
Protective Gloves:FIRE RETARDANT COTTON
Eye Protection:SAFETY GLASSES W/SIDE SHIELDS OR GOGGLES
Other Protective Equipment:CHEMICAL RESISTANT CLOTHING AS NECESSARY TO PREVENT SKIN CONTACT. AN EMERGENCY EYEWASH AND SHOWER SHOULD BE AVAILABLE.

Work Hygienic Practices:WASH HANDS THOROUGHLY WITH SOAP AND WATER
BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES.

Supplemental Safety and Health

GREAT CAUTION IS REQUIRED TO AVOID CONTACT WITH UNPROTECTED ELECTRICAL
DEVICES WHEN WEARING CONDUCTIVE DAFETY SHOES OR GROUNDING STRAPS.

===== Physical/Chemical Properties =====

HCC:R2

Boiling Pt:B.P. Text:NOT GIVEN

Melt/Freeze Pt:M.P/F.P Text:1195F,646C

Vapor Pres:NEGLIGIBLE

Vapor Density:NEGLIGIBLE

Spec Gravity:0.8-1.3

Evaporation Rate & Reference:NOT GIVEN

Solubility in Water:INSOLUBLE

Appearance and Odor:FINELY DIVIDED POWDER, DULL GRAY APPEARANCE

Percent Volatiles by Volume:NIL

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

WATER, STRONG OXIDIZERS, ACIDS, ALKALIS, HALOGENATED COMPOUNDS, IRON
POWDER

Stability Condition to Avoid:HEAT, WATER

Hazardous Decomposition Products:ALUMINUM OXIDE AND ALUMINUM NITRIDE

===== Disposal Considerations =====

Waste Disposal Methods:REUSE OR RECYCLE WHENEVER POSSIBLE. MATERIAL
THAT CANNOT BE REUSED MAY BE SENT TO A METALS RECLAMATION FACILITY
THAT IS ABLE TO HANDLE FINES. DISPOSAL MAY BE SUBJECT TO NATIONAL,
STATE OR LOCAL LAWS.

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particular situation.

MSDS Number: C5175 * * * * Effective Date: 08/10/04 * * * * Supercedes: 11/02/01



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

Copper, Powder

1. Product Identification

Synonyms: Bronze Powder; C.I. 77400; Arwood Copper

CAS No.: 7440-50-8

Molecular Weight: 63.546

Chemical Formula: Cu

Product Codes: 1728

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Copper	7440-50-8	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER AND

KIDNEYS. CHRONIC EXPOSURE MAY CAUSE TISSUE DAMAGE.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; CLASS D EXTINGUISHER

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Inhalation of dusts and fumes of metallic copper causes irritation of the upper respiratory tract, congestion of nasal mucous membranes, ulceration and perforation of the nasal septum, and pharyngeal congestion. Inhalation of copper fumes may give rise to metal fume fever (high temperature, metallic taste, nausea, coughing, general weakness, muscle aches, and exhaustion).

Ingestion:

Copper ingestion causes nausea, vomiting, abdominal pain, metallic taste, and diarrhea. Ingestion of large doses may cause stomach and intestine ulceration, jaundice, and kidney and liver damage.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. Exposure to copper dust may cause a greenish-black skin discoloration.

Eye Contact:

Small copper particles in the eyes may cause irritation, discoloration, and damage.

Chronic Exposure:

Prolonged or repeated exposure to copper can discolor skin and hair and irritate the skin; may cause mild dermatitis, runny nose, and irritation of the mucous membranes. Repeated ingestion may damage the liver and kidneys. Repeated inhalation can cause chronic respiratory disease.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function or pre-existing Wilson's disease may be more susceptible to the effects of this material.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact:

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard since the bulk solid does not burn, but very finely divided particles (ultra-fine powder) may burn in air.

Explosion:

Not considered to be an explosion hazard. Reactions with incompatibles may pose an explosion hazard. Liquid copper explodes on contact with water. High concentrations of finely divided copper particles in the air may present an explosion hazard. Sensitive to static discharge.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Avoid exposure to air and moisture. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Copper Dust and Mists, as Cu:

- OSHA Permissible Exposure Limit (PEL) -
1 mg/m³ (TWA)

- ACGIH Threshold Limit Value (TLV) -
1 mg/m³ (TWA)

Copper Fume:

- OSHA Permissible Exposure Limit (PEL) -
0.1 mg/m³ (TWA)

- ACGIH Threshold Limit Value (TLV) -
0.2 mg/m³ (TWA)

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Red Powder.

Odor:

Odorless.

Solubility:

Insoluble in water.

Density:

8.94

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

2595C (4703F)

Melting Point:

1083C (1981F)

Vapor Density (Air=1):

Not applicable.

Vapor Pressure (mm Hg):

1 @ 1628C (2962F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Copper becomes dull when exposed to air; on exposure to moist air it gradually converts to the carbonate. On long standing, a white, highly explosive peroxide deposit may form.

Hazardous Decomposition Products:

No information found.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Copper is incompatible with oxidizers, alkalis, acetylene, chlorine plus oxygen difluoride, phosphorus, nitric acid, potassium peroxide, 1-bromo-2-propyne, sulfur plus chlorates. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrozoic acid, potassium oxide, dimethyl sulfoxide plus trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide plus air, and lead azide. A potentially explosive reaction occurs with acetylenic compounds. Copper ignites on contact with chlorine, fluorine (above 121C), chlorine trifluoride, and hydrazinum nitrate (above 70C). An incandescent reaction occurs with potassium dioxide.

Conditions to Avoid:

Incompatibles and prolonged exposure to air and moisture.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen and a reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Copper (7440-50-8)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Copper (7440-50-8)                             Yes  Yes  No     Yes
  
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-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL  NDSL  Phil.
-----
Copper (7440-50-8)                             Yes   Yes  No    Yes
  
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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Copper (7440-50-8)                             No    No   Yes   No
  
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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     -RCRA-  -TSCA-
CERCLA  261.33  8(d)
-----
Copper (7440-50-8)                             5000   No    No
  
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER AND KIDNEYS. CHRONIC EXPOSURE MAY CAUSE TISSUE DAMAGE.

Label Precautions:

- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- Avoid breathing dust or vapors.
- Keep container closed.
- Use only with adequate ventilation.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

JOHNSON MATTHEY CATALOG CHEMICALS -- IRON POWDER, 10621 -- 9510-00N034651

===== Product Identification =====

Product ID:IRON POWDER, 10621
 MSDS Date:01/18/1988
 FSC:9510
 NIIN:00N034651
 MSDS Number: BQBXC
 === Responsible Party ===
 Company Name:JOHNSON MATTHEY CATALOG CHEMICALS
 Address:30 BOND ST
 City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Info Phone Num:508-521-6300
 Emergency Phone Num:508-521-6300;800-424-9300 (CHEMTREC)
 CAGE:0JVJI
 === Contractor Identification ===
 Company Name:JOHNSON MATTHEY CATALOG CHEMICALS
 Address:30 BOND ST
 Box:City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Phone:508-521-6300
 CAGE:0JVJI

===== Composition/Information on Ingredients =====

Ingred Name:IRON
 CAS:7439-89-6
 RTECS #:NO4565500
 Fraction by Wt: 100%
 OSHA PEL:5 MG/M3
 ACGIH TLV:10 MG/M3

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE:INGEST:NONE KNOWN. SKIN:MAY
 CAUSE IRRITATION. EYE:DUST CAN CAUSE CONJUNCTIVITIS, CHOROIDITIS,
 RETINITIS AND SIDEROSIS OF TISSUES IF IRON REMAINS IN THESE
 TISSUES. INHAL:POWDER OR DUST MAY CAUSE IRRITATION, PULMONARY
 FIBROSIS. CHRONIC:NONE KNOWN.
 Explanation of Carcinogenicity:NOT RELEVANT.
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:PRE-EXISTING RESPIRATORY
 CONDITIONS.

===== First Aid Measures =====

First Aid:INGEST:GET MD. SKIN:REMOVE CONTAMINATED CLOTHING, FLOOD SKIN
 WITH LARGE AMOUNTS OF WATER. IF IRRITATION PERSISTS GET MD.
 EYE:IMMEDIATELY FLUSH EYES, INCLUDING UNDER LIDS, WITH LARGE
 AMOUNTS OF WATER F OR AT LEAST 15 MINUTES. CALL MD. INHAL:NO

SPECIFIC INFORMATION AVAILABLE, GET MD.

===== Fire Fighting Measures =====

Extinguishing Media:FLAMM IN POWDERED FORM. MAY BE PYROPHOTIC. DO NOT USE WATER, CO*2, HALOGENATED EXTINGS, USE SPECIAL MIXTURES (SUPDAT)
 Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT . IF WITHOUT RISK, REMOVE MATERIAL FROM FIRE AREA. COOL CONTAINER FROM WATER FROM MAX DISTANCE.
 Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures:WEARING FULL PROTECTIVE EQUIPMENT, COVER SPILL WITH DRY SAND OR VERMICULITE. MIX WELL AND CAREFULLY TRANSFER TO A CONTAINER.
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL VENTILATED AREA. WASH THOROUGHLY AFTER USE.
 Other Precautions:NONE SPECIFIED BY MANUFACTURER.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED HIGH EFFICIENCY PARTICLE RESPIRATOR.
 Ventilation:GLOVE BAG OR BOX WITH A DRY INERT ATMOSPHERE FOR FINE POWDERS. LABORATORY FUME HOOD OR SOLID FORMS.
 Protective Gloves:RUBBER GLOVES.
 Eye Protection:CHEMICAL WORKERS GOGGLES .
 Other Protective Equipment:LAB COAT & APRON, FLAME & CHEMICAL RESISTANT COVERALLS, EYEWASH, SAFETY SHOWER & HYGIENIC FACILITIES FOR WASHING.
 Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
 Supplemental Safety and Health
 EXTING MEDIA:OF DRY CHEMICAL EXTINGUISHING AGENTS, POWDERED GRAPHITE, DRY SAND OR DOLOMITE. CNDTNS TO AVOID:VIOLENTLY W/H*2O*2. FINELY DIVIDED FRESHLY REDUCED IRON POWDER IS PYROPHORIC AND IGNITES ON EXPOSURE TO AN AT NORMAL TEMPERATURE.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:5432F,3000C
 Melt/Freeze Pt:M.P/F.P Text:2797F,1536C
 Vapor Pres:1 @ 1787C
 Spec Gravity:7.87 (H*2O=1)
 Evaporation Rate & Reference:0
 Solubility in Water:INSOLUBLE
 Appearance and Odor:SILVERY WHITE OR GREY METAL, BLACK TO GREY POWDER, ODORLESS
 Percent Volatiles by Volume:0

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 OXIDIZING MATERIALS, HALOGENS, ACIDS, H2*O*2, NO*2, POLYSTYRENE, PHOSGENE, CLF*3, NA*2C*2, WATER, MOIST AIR.
 Stability Condition to Avoid:INCOMPATIBLES, FOR FINE POWDERES AVOID

HEAT, SPARKS, OPEN FLAMES. RXN W/WATER CAN PRODUCE HYDROGEN. REACTS
(SUPP DATA)

Hazardous Decomposition Products:IRON OXIDE, HYDROGEN.

===== Disposal Considerations =====

Waste Disposal Methods:CONSULT STATE, LOCAL OR FEDERAL EPA REGULATIONS
FOR PROPER DISPOSAL.

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assume responsibility for the suitability of this information to their
particular situation.

ESM,INC. -- MAGNESIUM POWDER -- 6810-01-120-4084

===== Product Identification =====

Product ID:MAGNESIUM POWDER
MSDS Date:09/08/1986
FSC:6810
NIIN:01-120-4084
MSDS Number: BGMRR
=== Responsible Party ===
Company Name:ESM, INC.
Box:128
City:VALENCIA
State:PA
ZIP:16059
Country:US
Info Phone Num:412-898-1541 OR 812-273-6000 (DIST)
Emergency Phone Num:412-898-1541
CAGE:MO978
=== Contractor Identification ===
Company Name:ESM INC
Address:RT 8 AT COOPERSTOWN
Box:128
City:VALENCIA
State:PA
ZIP:16059
Country:US
Phone:412-898-1541
CAGE:ODKF6
Company Name:ESM, INC.
Box:128
City:VALENCIA
State:PA
ZIP:16059
Country:US
Phone:412-898-1541 OR 812-273-6000 (DIST)
CAGE:MO978
Company Name:MADISON CHEMICAL CO INC
Address:STATE RD 62
Box:125
City:MADISON
State:IN
ZIP:47250
Country:US
CAGE:60142

===== Composition/Information on Ingredients =====

Ingred Name:MAGNESIUM
CAS:7439-95-4
RTECS #:OM2100000
Fraction by Wt: >99.0%

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Health Hazards Acute and Chronic:ACUTE:CUTS, SCRATCHES, INFLAMMATORY
REACTION;REDNESS & PAIN OF EYES;SORE THROAT, COUGHING, ABDOMINAL
PAIN. CHRONIC:DERMATITIS.

Effects of Overexposure:SEE HEALTH HAZARDS DATA.

Medical Cond Aggravated by Exposure:CUTS AND SCRATCHES ON SKIN.

===== First Aid Measures =====

First Aid:EYES:FLUSH WITH PLENTY OF WATER;CALL A PHYSICIAN. SKIN:WASH WITH FLOWING WATER. INHALATION:REMOVE TO FRESH AIR.

===== Fire Fighting Measures =====

Flash Point:NONE

Extinguishing Media:DRY SAND;DO NOT USE WATER

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA WITH FULL PROTECTION.

Unusual Fire/Explosion Hazard:SUSPENSION OF MAGNESIUM DUST IN AIR MAY CAUSE AN EXPLOSION;IRRITATION BECAUSE OF FUMES.

===== Accidental Release Measures =====

Spill Release Procedures:USE PROPER PERSONAL PROTECTION;CLEAN UP USING NON-SPARKING TOOLS AND COLLECT IN STEEL DRUMS AND SEAL THEM AGAINST MOISTURE.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN COOL,DRY AREA;AVOID DUSTING;NO SMOKING,SPARKS OR OPEN FLAMES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED DUST RESPIRATOR IF ABOVE TLV/PEL.

Ventilation:GOOD ROOM VENTILATION

Protective Gloves:FIRE RESISTANT,NON-STATIC GLOVES

Eye Protection:GOGGLES

Other Protective Equipment:SAFETY SHOWER,SAFETY SHOES,APRON,EYE-WASH

Work Hygienic Practices:AVOID CONTACT WITH SKIN AND EYES;DO NOT BREATHE DUST.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:F8

Boiling Pt:B.P. Text:2030F/1110C

Melt/Freeze Pt:M.P/F.P Text:1202F

Vapor Pres:1 MM HG

Spec Gravity:1.74

Solubility in Water:NEGLIGIBLE(WATER REA

Appearance and Odor:SILVERY METAL;NO ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

ACIDS,HALOGENS,HF

Stability Condition to Avoid:WATER

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

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assume responsibility for the suitability of this information to their
particular situation.

JOHNSON MATTHEY CATALOG CO -- MANGANESE POWDER, 00200 -- 6810-00N039979

===== Product Identification =====

Product ID:MANGANESE POWDER, 00200
 MSDS Date:03/23/1988
 FSC:6810
 NIIN:00N039979
 MSDS Number: BRMXM
 === Responsible Party ===
 Company Name:JOHNSON MATTHEY CATALOG CO
 Address:30 BOND ST
 City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Info Phone Num:508-521-6300
 Emergency Phone Num:508-521-6300;800-424-9300 (CHEMTREC)
 CAGE:0JVJ1
 === Contractor Identification ===
 Company Name:JOHNSON MATTHEY CATALOG CO INC ALFA AESAR
 Address:30 BOND ST
 Box:City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Phone:978-521-6300
 CAGE:0JVJ1

===== Composition/Information on Ingredients =====

Ingred Name:MANGANESE (SARA III)
 CAS:7439-96-5
 RTECS #:009275000
 Fraction by Wt: 100%
 OSHA PEL:(C) 5 MG/M3 DUST
 ACGIH TLV:5 MG/M3 DUST 9293

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE: SKIN: MAY CAUSE IRRITATION.
 EYE: MAY CAUSE IRRIT. INHAL: MAY CAUSE METAL-FUME FEVER, WITH
 NAUSEA AND VOMITING. CHRONIC: INGEST: MAY DAMAGE THE CNS, SYMPTOMS
 BEING SIMILAR TO THOSE OF PARKINSON' S DISEASE. MAY CAUSE LIVER
 ENLARGEMENT.INHAL: MAY CAUSE BRONCHITIS AND PULMONIA. MAY DAMAGE
 THE CNS, (EFTS OF OVEREXP)
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:HLTH HAZ: SYMPTOMS BEING SIMILAR TO PARKINSON'S
 DISEASE. MAY CAUSE LIVER ENLARGEMENT. OTHER MANGANESE HAS CAUSED
 TUMORS IN LABORATORY ANIMALS.
 Medical Cond Aggravated by Exposure:NONE KNOWN.

===== First Aid Measures =====

First Aid:INGEST: NO DATA AVAILABLE BUT ONE SHOULD OBTAIN MEDICAL
 ATTENTION. SKIN: REMOVE CONTAMINATED CLOTHING, FLOOD SKIN WITH

LARGE AMOUNTS OF WATER. IF IRRITATION PERSISTS SEEK MEDICAL ATTN.
EYE: IMMED FLUS H EYES, INCLUDING UNDER EYELIDS, WITH LARGE AMTS OF
WATER FOR AT LEAST 15 MIN. CALL A PHYSICIAN. INHAL: NO SPECIFIC
INFORMATION AVAILABLE, ONE SHOULD OBTAIN MEDICAL ATTENTION.

=====
===== Fire Fighting Measures =====

Extinguishing Media:FLAMMABLE SOLID IN POWDER FORM. DO NOT USE WATER,
CARBON DIOXIDE OR HALOGENATED EXTINGUISHERS. USE DRY CHEM (SUPP
DATA)

Fire Fighting Procedures:NO SPECIAL FIREFIGHTING PROCEDURES NEEDED, USE
NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIP . IF WITHOUT
RISK REMOVE MATERIAL FROM FIRE AREA.

Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

=====
===== Accidental Release Measures =====

Spill Release Procedures:WEARING FULL PROTECTIVE EQUIPMENT, COVER SPILL
WITH DRY SAND OR VERMICULITE. MIX WELL AND CAREFULLY TRANSFER TO A
CONTIANER.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
===== Handling and Storage =====

Handling and Storage Precautions:KEEP CONTAINER TIGHTLY CLOSED. STORE
IN A COOL, DRY, WELL-VENTILATED AREA.

Other Precautions:NONE SPECIFIED BY MANUFACTURER.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED HIGH EFFICIENCY PARTICLE
RESPIRATOR.

Ventilation:LABORATORY FUME HOOD.

Protective Gloves:RUBBER GLOVES.

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:LAB COAT AND APRON, FLAME AND CHEMICAL
RESISTANCT COVERALLS, EYEWASH CAPABLE OF SUSTAINED FLUSHING, SAFETY
(SUPP DATA)

Work Hygienic Practices:WASH THOROUGHLY AFTER USE.

Supplemental Safety and Health

FIRE FIGHT PROC: EXTINGUISHING AGENTS, DRY SAND OR GROUND DRY DOLOMITE.
OTHER PROT EQUIP: DRENCH SHOWER AND HYGIENIC FACILITIES FOR
WASHING.

=====
===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:3902F,2150C

Vapor Pres:1 @ 1292C

Spec Gravity:7.43 (H*2O=1)

Evaporation Rate & Reference:0 (BUTYL ACETATE=1)

Solubility in Water:DECOMPOSES SLOWLY

Appearance and Odor:STEEL GREY METAL, ODORLESS.

Percent Volatiles by Volume:0

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZERS, STRONG ACIDS, WATER, STEAM, HALOGENS, NA, SO*2, P, AL
+ AIR, O*3, H*2O*2, NO*2, CO*2, BASES.

Stability Condition to Avoid:THERMAL DECOMPOSITION, INCOMPATIBILITIES.

Hazardous Decomposition Products:OXIDES OF MANGANESE, H*2

===== Disposal Considerations =====

Waste Disposal Methods:CONSULT STATE, LOCAL OR FEDERAL EPA REGULATIONS
FOR PROPER DISPOSAL.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Niobium, powder, -60 to -325 mesh, 99.8%

ACC# 99042

Section 1 - Chemical Product and Company Identification

MSDS Name: Niobium, powder, -60 to -325 mesh, 99.8%**Catalog Numbers:** AC317460000, AC317460250, AC317480000, AC317480250**Synonyms:** None Known.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7440-03-1	Niobium, powder	99.8	231-113-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: grey solid.

Pyrophoric. Flammable in the form of dust when exposed to flame or by chemical reaction.

Danger! May be pyrophoric and become spontaneously flammable in air. May cause eye, skin, and respiratory tract irritation.**Target Organs:** None known.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation.**Inhalation:** May cause respiratory tract irritation.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Evacuate area and fight fire from a safe distance. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. **Material can spontaneously ignite (pyrophoric) when exposed to air at normal or slightly elevated temperatures.** During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. May re-ignite after fire is extinguished. **Finely divided dusts may exhibit pyrophoric tendencies.**

Extinguishing Media: Use dry chemical. Contact professional fire-fighters immediately.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 3; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Isolate area and deny entry. Provide ventilation. Place under an inert atmosphere.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Minimize dust generation and accumulation. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Take precautionary measures against static discharges. Avoid ingestion and inhalation. Handle under an inert atmosphere.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Store under an inert atmosphere.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Niobium, powder	none listed	none listed	none listed

OSHA Vacated PELs: Niobium, powder: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: grey

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 4742 deg C

Freezing/Melting Point: 2468 deg C

Decomposition Temperature: Not available.

Solubility: Insoluble.

Specific Gravity/Density: Not available.

Molecular Formula: Nb

Molecular Weight: 92.91

Section 10 - Stability and Reactivity

Chemical Stability: Powder or liquid is pyrophoric. Spontaneously flammable in air.

Conditions to Avoid: Incompatible materials, ignition sources, dust generation, exposure to air.

Incompatibilities with Other Materials: Acids, bases, halogens, oxidizing agents.

Hazardous Decomposition Products: Nature of decomposition products unknown..

Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:

CAS# 7440-03-1: QT9900000

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 7440-03-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	PYROPHORIC METALS, N.O.S.	PYROPHORIC METALS, N.O.S.
Hazard Class:	4.2	4.2
UN Number:	UN1383	UN1383
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 7440-03-1 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7440-03-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

F

Risk Phrases:

R 17 Spontaneously flammable in air.

Safety Phrases:

S 33 Take precautionary measures against static discharges.

WGK (Water Danger/Protection)

CAS# 7440-03-1: No information available.

Canada - DSL/NDSL

CAS# 7440-03-1 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B6.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
--

MSDS Creation Date: 3/25/1999

Revision #4 Date: 3/18/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

ALCAN POWDERS AND PIGMENTS -- SILICON POWDER, 201 -- 6810-00N018788

===== Product Identification =====

Product ID:SILICON POWDER, 201
 MSDS Date:02/01/1991
 FSC:6810
 NIIN:00N018788
 MSDS Number: BLDPD
 === Responsible Party ===
 Company Name:ALCAN POWDERS AND PIGMENTS
 Address:901 LEHIGH AVENUE
 City:UNION
 State:NJ
 ZIP:07083
 Country:US
 Info Phone Num:201-851-4500
 Emergency Phone Num:201-851-4543
 CAGE:0ME29
 === Contractor Identification ===
 Company Name:ALCAN POWDERS AND PIGMENTS
 Address:901 LEHIGH AVENUE
 Box:City:UNION
 State:NJ
 ZIP:07083
 Country:US
 Phone:201-851-4500
 CAGE:0ME29

===== Composition/Information on Ingredients =====

Ingred Name:SILICON
 CAS:7440-21-3
 RTECS #:VW0400000
 Fraction by Wt: 100%
 OSHA PEL:15 MG/M3 TDUST
 ACGIH TLV:10 MG/M3 TDUST; 9293

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE: INHAL: CAN CAUSE IRRITATION OF
 THE RESPIRATORY SYSTEM. SKIN: MAY BE IRRITATING IN SOME CASES. EYE:
 MAY IRRITATE THE EYES. INGEST: NO INFORMATION AVAILABLE. CHRONIC:
 STUDIES OF CHRONIC EXPOSURE TO SILICON METAL HAVE SHOWN A LOW
 ORDEROF TOXICITY. CHRONIC EXPOSURE TO DUST MAY CAUSE CHRONIC
 BRONCHITIS.
 Explanation of Carcinogenicity:NOT RELEVANT.
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:INHAL: REMOVE FROM EXPOSURE AND CONSULT PHYS. SKIN: WASH THE
 AFFECTED AREAS WITH SOAP AND WATER. EYE: FLUSH EYES WITH WATER FOR
 AT LEAST 15 MIN. INGEST: CONSULT PHYS IMMED.

=====
Fire Fighting Measures
=====

Lower Limits:160OZ/1000FT
Extinguishing Media:DRY SAND OR OTHER INERT MATERIAL. DO NOT USE WATER OR CLASS "A", "B", OR "C" EXTINGUISHERS OR HALOGENATED AGENTS.
Fire Fighting Procedures:GENTLY COVER THE BURNING POWDER AND FORM A RING AROUND IT WITH THE SAND OR OTHER INERT MATERIAL. ALLOW TO COOL.
Unusual Fire/Explosion Hazard:MODERATE FIRE AND EXPLOSION HAZARD IN THE FORM OF DUST WHEN EXPOSED TO FLAME.

=====
Accidental Release Measures
=====

Spill Release Procedures:WEAR PROTECTIVE CLOTHING, GOGGLES AND NIOSH/MSHA APPROVED RESPIRATOR. SPRINKLE MODERATELY WITH DAMP SAND AND COLLECT FOR DISPOSAL AVOIDING DUST CLOUDS AS MUCH AS POSSIBLE.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:STORE IN A COOL, DRY PLACE AVOIDING CONTACT WITH HEAT AND ACIDS. AVOID CREATING DUST CLOUDS.
Other Precautions:NONE SPECIFIED BY MANUFACTURER.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:USE NIOSH/MSHA APPROVED SUPPLIED AIR RESPIRATORY PROTECTION IN CONFINED OR ENCLOSED SPACES IF NEEDED.
Ventilation:LOCAL EXHAUST, EXPLOSION PROOF, MINIMUM FACE VELOCITY OF 60 F.P.M. NO SMOKING OR OPEN LIGHTS.
Protective Gloves:CHEMICAL RESISTANT GLOVES.
Eye Protection:CHEM WORK GOG. MAY ADD FULL (SUPP DATA)
Other Protective Equipment:APRON.
Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
EYE PROT: LENGTH FACESHIELD TO GOGGLES .

=====
Physical/Chemical Properties
=====

HCC:N1
Boiling Pt:B.P. Text:4271F,2355C
Melt/Freeze Pt:M.P/F.P Text:2570F,1410C
Spec Gravity:2.32
Solubility in Water:NONE
Appearance and Odor:GRAY AND ODORLESS.

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES
WATER, STRONG ALKALIS AND OXIDIZING AGENTS.
Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

=====
Disposal Considerations
=====

Waste Disposal Methods:PUT IN A CLOSED CONTAINER FOR DISPOSAL. DISPOSER MUST COMPLY WITH FEDERAL, STATE OR LOCAL WASTE DISPOSAL LAWS.

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VENTRON CORP -- TITANIUM POWDER -- 6810-00N000684

===== Product Identification =====

Product ID:TITANIUM POWDER
 MSDS Date:05/18/1994
 FSC:6810
 NIIN:00N000684
 MSDS Number: BCGBF
 === Responsible Party ===
 Company Name:VENTRON CORP
 Address:CONGRESS ST
 City:BEVERLY
 State:MA
 ZIP:01915
 Country:US
 Info Phone Num:617-922-1875
 Emergency Phone Num:617-922-1875
 CAGE:VENTR
 === Contractor Identification ===
 Company Name:THIOKOL CORP VENTRON DIVISION
 Address:150 ANDOVER ST
 Box:City:DANVERS
 State:MA
 ZIP:01923-1428
 Country:US
 CAGE:01785
 Company Name:VENTRON CORP
 Address:152 ANDOVER STREET
 Box:City:DANVERS
 State:MA
 ZIP:01923
 Country:US
 Phone:617-777-1970
 CAGE:VENTR

===== Composition/Information on Ingredients =====

Ingred Name:TITANIUM
 CAS:7440-32-6
 RTECS #:XR1700000
 Fraction by Wt: 100%
 OSHA PEL:15 MG/M3 TDUST
 ACGIH TLV:10 MG/M3 TDUST

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE & CHRONIC:NONE LISTED BY
 MANUFACTURER.
 Explanation of Carcinogenicity:NOT RELEVANT.
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:INGEST:CALL MD IMMEDIATELY . INHAL:REMOVE TO FRESH AIR.

SUPPORT BREATHING (GIVE O*2/ARTF RESP) . EYES:IMMEDIATELY FLUSH
W/POTABLE WATER FOR MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM MD
(). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD .

===== Fire Fighting Measures =====

Extinguishing Media:DOLOMITE.
Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE
EQUIPMENT . AVOID WATER - SMOTHER IN DOLOMITE.
Unusual Fire/Explosion Hazard:EXTRA FLAMMABLE WHEN WET.

===== Accidental Release Measures =====

Spill Release Procedures:MIX WITH AT LEAST EQUAL QUANTITIES OF
DOLOMITE. REMOVE TO SAFE AREA AND INCINERATE.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:FLAMMABLE.
Other Precautions:KEEP WET WITH 30% TO 50% WATER.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR
EXPOSURE OF CONCERN .
Ventilation:NONE SPECIFIED BY MANUFACTURER.
Protective Gloves:IMPERVIOUS GLOVES .
Eye Protection:ANSI APPRVD CHEM WORKERS GOGGLES .
Other Protective Equipment:ANSI APPRVD EMERGENCY EYE WASH & DELUGE
SHOWER .
Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:F8
Boiling Pt:B.P. Text:6395F,3535C
Melt/Freeze Pt:M.P/F.P Text:3034F,1668C
Vapor Pres:0 @ 20C
Spec Gravity:4.5
Evaporation Rate & Reference:NOT KNOWN
Solubility in Water:0
Appearance and Odor:FINE POWDER - NO ODOR.
Percent Volatiles by Volume:61

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
FREON, CHLORATES, HALIDES.
Stability Condition to Avoid:IGNITION OF DAMP TITANIUM.
Hazardous Decomposition Products:NONE SPECIFIED BY MANUFACTURER.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL
REGULATIONS .

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ZINC CORP OF AMERICA -- ZINC POWDER 1212 -- 6850-00N033996

===== Product Identification =====

Product ID:ZINC POWDER 1212
MSDS Date:07/29/1991
FSC:6850
NIIN:00N033996
MSDS Number: BPVZH
=== Responsible Party ===
Company Name:ZINC CORP OF AMERICA
Address:300 FRANKFORT RD
City:MONACA
State:PA
ZIP:15061-2295
Country:US
Info Phone Num:412-774-1020
Emergency Phone Num:412-774-1020;800-424-9300 (CHEMTREC)
CAGE:0GMG6

=== Contractor Identification ===
Company Name:ZINC CORPORATION OF AMERICA
Address:300 FRANKFORT ROAD
Box:City:MONACA
State:PA
ZIP:15061-2295
Country:US
Phone:724-774-1020
CAGE:0GMG6

===== Composition/Information on Ingredients =====

Ingred Name:ZINC (SARA III)
CAS:7440-66-6
RTECS #:ZG8600000
Fraction by Wt: 98.0%
OSHA PEL:5MG/M3;10 MG/M3 STEL
ACGIH TLV:5MG/M3;10 MG/M3 STEL
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:LEAD (SARA III)
CAS:7439-92-1
RTECS #:OF7525000
Fraction by Wt: 0.50%
OSHA PEL:0.05 MG/M3
ACGIH TLV:0.15 MG/M3
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:EFTS OF OVEREXP:PRODUCE MANY OF THE SYMPS OF SHORT-TERM
EXPOS & MAY ALSO CAUSE CNS DMG, GI DISTURBANCES, ANEMIA, (ING 4)
RTECS #:9999999ZZ

Ingred Name:ING 3:& WEIGHT DROP. SYMPS OF CNS DMG INCL FATIGUE, HDCH,
TREMORS, HYPERTENSION, HALLUCINATIONS, CONVULSIONS, (ING 5)
RTECS #:9999999ZZ

Ingred Name:ING 4:& DELIRIUM. KIDNEY DYSFUNCTION & POSS INJURY HAS ALSO
BEEN ASSOC W/CHRONIC LEAD POISONING. LEAD (7439-92-1) (ING 6)

RTECS #:9999999ZZ

Ingred Name:ING 5:APPEARS ON NAVY LISTING OF OCCUP REPROD HAZ. SEEK
CONSULTATION FROM APPROP HLTH PROFESSIONALS CONCERNING (ING 7)
RTECS #:9999999ZZ

Ingred Name:ING 6: LATEST HAZARDOUS LIST INFORMATION AND SAFE HANDLING
AND EXPOSURE RECOMMENDATIONS .
RTECS #:9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:YES OSHA:NO
Health Hazards Acute and Chronic:ACUTE:ZINC/ZINC OXIDE:INHAL OF HIGH
LEVELS OF ZINC OXIDE MAY RSLT IN TIGHTNESS OF CHEST, METALLIC
TASTE, COUGH, DIZZ, FEVER, CHILLS, HDCH, NAUS, & DRY THROAT.
OVEREXP MAY PRODUCE SYMPS KNOWN AS METAL FUME FEVER/"ZINC SHAKES";
AN ACUTE, SELF-LIMITING CNDTN WITHOUT RECOGNIZED COMPLICATIONS.
SYMPS OF (EFTS OF OVEREXP)
Explanation of Carcinogenicity:LEAD: GROUP 2B (IARC).
Effects of Overexposure:HLTH HAZ: METAL FUME FEVER INCL: CHILLS, FEVER,
MUSCULAR PAIN, NAUS, VOMIT, ABDOM SPASMS, FATIGUE, SLEEP
DISTURBANCES, WEIGHT LOSS, ANEMIA, & PAIN IN LEGS, ARMS/JOINTS.
CHRONIC:ZINC/ZINC OXIDE:CHRONIC EXPOSURE TO ZINC MAY CAUSE RESP
TRACT IRRIT W/NASOPHARYNGITIS & LARYNGITIS. LEAD:PRLNGD EXPOS TO
LEAD MAY(ING 3)
Medical Cond Aggravated by Exposure:INHALATION OF DUST MAY BE AN
IRRITANT TO PRE-EXISTING RESPIRATORY CONDITIONS.

===== First Aid Measures =====

First Aid:SYMPS RSLTG FROM INHAL OVEREXP USUALLY DISAPPEAR WITHIN 24
HRS. SYMPTOMATIC TREATMENT, SUCH AS BED REST & POSS ASPRIN IS RECOM
TO PROVIDE RELIEF FROM FEVER & CHILLS. EYE:FLUSH W/COPIOUS AMTS OF
H*2O F OR @ LST 15 MIN. IN ALL CASES, SEE MD FOR MED ATTN.
SKIN:FLUSH W/COPIOUS AMTS OF H*2O. SEE MD . INHAL:REMOVE TO FRESH
AIR. SUPPORT BRTH (GIVE O*2/ARTF RESP). INGEST:GET MD IMMED .

===== Fire Fighting Measures =====

Extinguishing Media:SMOTHER & COOL W/A SUITABLE DRY EXTINGUISHING AGENT
(CLASS D) SUCH AS DRY POWDER, ZINC OXIDE/DRY SAND. DO NOT USE H*2O.
Fire Fighting Procedures:NIOSH/MSHA APPROVED SCBA & FULL PROT EQUIP .
DO NOT SPREAD BURNING MATL. SMOTHER & ALLOW FIRE TO GO OUT. DRY
ZINC DUST WILL NOT IGNITE (SUPP DATA)
Unusual Fire/Explosion Hazard:BULK DUST IN CNTCT W/H*2O OR DAMP AIR
EVOLVES HYDROGEN. THE HEAT PRODUCED DURING THIS RXN COULD IGNITE
THE HYDROGEN. AN EXPLO CNDTN MAY EXIST IF (SUPP DATA)

===== Accidental Release Measures =====

Spill Release Procedures:PROHIBIT SMOKING, AVOID ALL IGNITION SOURCES,
AND AVOID DUSTING. METAL SHOULD BE CONTAINED FOR RECYCLING.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN A COOL, DRY, VENTILATED

SPACE, SEPARATE FROM ACIDS AND ALKALIS. PROTECT FROM PHYSICAL DAMAGE.

Other Precautions:PRACTICE GOOD PERSONAL HYGIENE WHEN WORKING IN AREAS WHERE THIS MATERIAL IS USED.

=====
 Exposure Controls/Personal Protection
 =====

Respiratory Protection:USE NIOSH/MSHA APPROVED TYPE RESPIRATOR FOR DUSTING CONDITIONS OR IN THE PRESENCE OF ZINC VAPOR.

Ventilation:LOCAL EXHAUST OR OTHER VENT THAT WILL REDUCE DUST CONCENTRATIONS TO LESS THAN PERMISSIBLE EXPOSURE LIMITS.

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:BARRIER CREAMS MAY HELP PREVENT SKIN IRRITATION IN HYPERSENSITIVE INDIVIDUALS.

Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

FIRE FIGHT PROC: SPONTANEOUSLY, BUT ONCE IGNITED, MAY BURN READILY IN AIR. EXPLO HAZ: THIS HAPPENS IN CONFINED SPACE. DRY DUST MAY FORM A DUST EXPLOSIVE MIXTURE IN AIR. ZINC OXIDE FUME MAY RESULT FROM COMBUSTION OF ZINC DUST. IGNIT TEMP: CLOUD 690C, LAYER 540C. IGNIT SENSITIVITY:<0.1. EXPLOSION SEVERITY: <0.1.

=====
 Physical/Chemical Properties
 =====

HCC:R2

Boiling Pt:B.P. Text:1665F,907C

Melt/Freeze Pt:M.P/F.P Text:788F,420C

Spec Gravity:7.12

Solubility in Water:INSOLUBLE

Appearance and Odor:GRAY GRANULAR METALLIC PARTICLES WITH NO ODOR.

=====
 Stability and Reactivity Data
 =====

Stability Indicator/Materials to Avoid:YES

AVOID CONTACT WITH ACIDS, ALKALIS, & H*2O.

Stability Condition to Avoid:HYDROGEN MAY EVOLVE WHEN IN CONTACT WITH WATER OR DAMP AIR.

Hazardous Decomposition Products:NONE

=====
 Disposal Considerations
 =====

Waste Disposal Methods:CONTAIN IN A DRY CLOSED CNTNR. MATERIAL MAY BE RECYCLED OR DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

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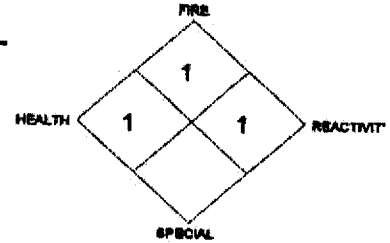
34600 Solon Road • Solon, Ohio 44139-2695
(440) 248-0100 • Fax: (440) 248-0723

24 Hour Response
Chem Tel (1-800-255-3924)

MATERIAL SAFETY DATA SHEET

NFPA HAZARD RATING

- 4 EXTREME
- 3 HIGH
- 2 MODERATE
- 1 SLIGHT
- 0 INSIGNIFICANT



PAGE: 1 OF 3

PRODUCT FAMILY: GADWELD® ALUMINUM WELDING MATERIAL
PRODUCTS INCLUDED: MATERIAL TYPE A22

DATE PREPARED: 3/8/90

REVISED: 3/03/05

MSDS: 234M

1. INGREDIENTS

		EXPOSURE LIMITS (mg/m ³)			
INGREDIENTS	CAS #	OSHA PEL	ACGIH TLV	WEIGHT PERCENT	TSCA INV.
TIN OXIDE	18282-10-5	2.0	-----	NOT > 45	YES
ALUMINUM	7429-90-5	TOTAL DUST 15.0 RESPIRABLE FRACTION 5.0	DUST 10.0 FUME 5.0	NOT > 45 (FUME OR DUST)	YES
COPPER OXIDE	1317-39-1	DUST 1.0 FUME 0.1	DUST 1.0 FUME 0.2	NOT > 15	YES
CALCIUM FLUORIDE	7789-75-5	2.5 AS FLUORIDE	2.5 AS FLUORIDE	NOT > 5	YES

2. PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: N/A
 VAPOR PRESSURE: N/A
 VAPOR DENSITY: N/A
 SOLUBILITY IN WATER: Insoluble, 0
 SPECIFIC GRAVITY (H₂O=1): 5
 MELTING POINT: @ 250°C (482°F)
 EVAPORATION RATE (BUTYL ACETATE=1): N/A
 APPEARANCE AND ODOR: Silvery-white powder; Odorless

MATERIAL SAFETY DATA SHEET

ERICO, INC.

34600 Solon Road

Solon, Ohio 44139

(440) 248-0100

PAGE: 2 OF 3

PRODUCT FAMILY: CADWELD® ALUMINUM WELDING MATERIAL
PRODUCTS INCLUDED: MATERIAL TYPE A22

DATE PREPARED: 3/8/90

REVISED: 3/03/05

MSDS: 234M

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): Self ignites above 899°C (1650°F) (Indirect Heating).

FLAMMABLE LIMITS: LEL - N/A UEL - N/A

EXTINGUISHING MEDIA: None

SPECIAL FIRE FIGHTING PROCEDURES: Water application should be at a reasonable distance. Use of hand water buckets or hand storage pumps is not recommended.

UNUSUAL FIRE AND EXPLOSION HAZARD: Material suspended in dust-laden air cloud may ignite at lower than normal ignition temperature.

4. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Temperature above ignition.

INCOMPATIBILITY (MATERIALS TO AVOID): Will react with moisture, mineral acids, halogenated compounds, and harsh alkalis. Avoid exposure to open flames or other possible ignition sources.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur.

5. HEALTH HAZARD DATA

ROUTES OF ENTRY: Primary route of entry - Inhalation.

HEALTH HAZARDS: Burns from contact with reaction or reaction products. Dust and fumes are irritants to eyes and upper respiratory tract.

CARCINOGENICITY: NTP - No IARC MONOGRAPHS - No OSHA REGULATED - No

SIGNS/SYMPTOMS OF EXPOSURE: (See Health Hazards)

EMERGENCY AND FIRST AID PROCEDURES: Standard treatment for burns. For inhalation of dust, fume, remove from exposure, provide fresh air, flush eyes with water, consult physician.

PRODUCT FAMILY: CADWELD® ALUMINUM WELDING MATERIAL
PRODUCTS INCLUDED: MATERIAL TYPE A22

DATE PREPARED: 3/8/90

REVISED: 3/03/05

MSDS: 234M

6. PRECAUTIONS FOR SAFE HANDLING AND USE

ACTION TO TAKE FOR SPILLS/LEAKS: All unused, spilled materials may be swept up for disposal using soft, dry sponge or soft natural fiber brush, and non-sparking conductive scoop. Avoid actions that would cause material to disperse in air.

WASTE DISPOSAL METHOD: Contact factory for assistance or dispose of in accordance with Federal, State, and Local regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Materials should be kept dry and stored in "NO SMOKING OR OPEN FLAME" area. Restriction to authorized personnel is recommended.

7. CONTROL MEASURES

RESPIRATORY PROTECTION: Where TLV is exceeded, use NIOSH approved particulate respirator.

VENTILATION: Local Exhaust - Use only when TLV is exceeded. Mechanical - Must be specifically approved for use with reactive, combustible dust.

PROTECTIVE GLOVES: Recommended for handling hot equipment.

EYE PROTECTION: Safety glasses recommended and caution to user to avoid direct eye contact with "flash" of light from reaction.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: None

8. ADDITIONAL INFORMATION

This product contains compounds which are subject to reporting requirements of Section 313 of Title III of SARA and 40 CFR 372.



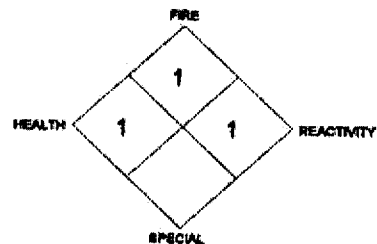
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MATERIAL SAFETY DATA SHEET

NFPA HAZARD RATING

- 4 EXTREME
- 3 HIGH
- 2 MODERATE
- 1 SLIGHT
- 0 INSIGNIFICANT



PAGE: 1 OF 3

PRODUCT FAMILY: CADWELD® STARTING MATERIAL
NOTE: THIS MATERIAL IS NOT SOLD SEPARATELY.

DATE PREPARED: 3/28/90

REVISED: 3/03/05

MSDS: 328J

1. INGREDIENTS

INGREDIENTS	CAS #	EXPOSURE LIMITS (mg/m ³)		WEIGHT PERCENT	TSCA INV.
		OSHA PEL	ACGIH TLV		
ALUMINUM	7429-90-5	TOTAL DUST 15.0 RESPIRABLE FRACTION 5.0	DUST 10.0 FUME 0.2	NOT > 45% FUME OR DUST	YES
CUPROUS OXIDE CUPRIC OXIDE	1317-39-1 1317-38-0	1.0 DUST 0.1 FUME	1.0 DUST 0.2 FUME	NOT > 25% NOT > 25%	YES
IRON OXIDE	1317-61-9	10.0	10.0	NOT > 20%	YES

2. PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: N/A
 VAPOR PRESSURE: N/A
 VAPOR DENSITY: N/A
 SOLUBILITY IN WATER: Insoluble
 SPECIFIC GRAVITY (H₂O=1): 4.0
 MELTING POINT: @ 660°C (1220°F)
 EVAPORATION RATE (BUTYL ACETATE=1): N/A
 APPEARANCE AND ODOR: Silvery, Gray Powder, Odorless

M A T E R I A L S A F E T Y D A T A S H E E T

ERICO, INC.

34600 Solon Road

Solon, Ohio 44139

(440) 248-0100

PAGE: 2 OF 3

PRODUCT FAMILY: CADWELD® STARTING MATERIAL

NOTE: THIS MATERIAL IS NOT SOLD SEPARATELY.

DATE PREPARED: 3/28/90

REVISED: 3/03/05

MSDS: 328J

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): Self ignites above 455°C (850°F) (Indirect Heating).

FLAMMABLE LIMITS: LEL - 40 MG/L (Aluminum) UEL - N/A

EXTINGUISHING MEDIA: None

SPECIAL FIRE FIGHTING PROCEDURES: Halogenated extinguishing agents or water should not be used. Let fire extinguish itself. (See Unusual Fire & Explosion Hazards.) Use self-contained breathing apparatus, in pressure demand mode.

UNUSUAL FIRE AND EXPLOSION HAZARD: Starting material dust may be ignited by static charge and burns at extremely high temperature. In bulk form, it is ignitable with difficulty, (see Flash Point).

4. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Temperatures above ignition.

INCOMPATIBILITY (MATERIALS TO AVOID): Will react with moisture, mineral acids, halogenated compounds, and harsh alkalis. Material capable of causing sparks or accumulating strong static charges, should NOT be used.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur.

5. HEALTH HAZARD DATA

ROUTES OF ENTRY: Primary route of entry - Inhalation

HEALTH HAZARDS: Burns from contact with reaction or reaction products. Direct eye contact with "flash" of light from reaction, can result in temporary blindness. Dust and fumes are irritant to eyes and upper respiratory tract. Long term exposure to copper-containing dusts may cause allergic dermatitis.

CARCINOGENICITY: NTP - No IARC MONOGRAPHS - No OSHA REGULATED - No

SIGNS/SYMPTOMS OF EXPOSURE: (See Health Hazards)

EMERGENCY AND FIRST AID PROCEDURES: Standard treatment for burns. For inhalation of dust, fume, remove from exposure, provide fresh air, flush eyes with water, consult physician.

PRODUCT FAMILY: CADWELD® STARTING MATERIAL
NOTE: THIS MATERIAL IS NOT SOLD SEPARATELY.

DATE PREPARED: 3/28/90

REVISED: 3/03/05

MSDS: 328J

6. PRECAUTIONS FOR SAFE HANDLING AND USE

ACTION TO TAKE FOR SPILLS/LEAKS: All unused, spilled materials may be swept up for disposal using soft, dry sponge or soft natural fiber brush, and non-sparking conductive scoop. Synthetic fiber bristle brushes and plastic or other non-conductive scoops should NOT be used. Avoid actions that would create dust laden cloud or cause powder to disperse in air.

WASTE DISPOSAL METHOD: Contact factory for assistance or dispose of in accordance with Federal, State, and Local regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Materials must be kept dry.

7. CONTROL MEASURES

RESPIRATORY PROTECTION: Where TLV is exceeded, use NIOSH approved particulate respirator.

VENTILATION: Local Exhaust - Use only when TLV is exceeded. Exhaust system must be specifically approved for use with reactive combustible dust. (See NFPA #77 Nat'l. Fire Protection Association, Batterymarch Park, Quincy, Mass. 62269.) Exhaust systems electrical equipment should be suitable for Class II, Group E locations.

PROTECTIVE GLOVES: Recommended for handling hot equipment.

EYE PROTECTION: Safety glasses and caution to user to avoid direct eye contact with "flash" of light from reaction.

8. ADDITIONAL INFORMATION

This product contains ingredients subject to reporting requirements of Section 313 of Title III of SARA and 40 CFR 372.

QinetiQ Nanomaterials

DATE: MAR 2004

MATERIAL SAFETY DATA SHEET - TUNGSTEN CARBIDE NANOPOWDER

1. PRODUCT AND COMPANY IDENTIFICATION

- 1.1 Product Name - Tungsten Carbide nanopowder
- 1.2 Chemical Symbol - WC
- 1.3 This powder is an experimental sample, comprised of loosely aggregated ultrafine nanometer particles. No data yet exists on the effects of such fine particles on the body.
Special care should be taken to avoid ingestion, inhalation, skin contact or eye contact
- 1.4 Supplier - QinetiQ Nanomaterials Limited
Cody Technology Park
X107 Building
Ively Road
Farnborough
Hampshire
GU14 0LX
- QinetiQ united states
QinetiQ inc.
2345 Crystal Drive
suite 909
IV Crystal Park
Arlington, VA 22202
703-44-5454
- Telephone - +44 (0)1252 393000
Fax - +44 (0) 1252 397184
Emergency Phone - +44 (0)1252 393000 (outside working hours)
Web Site - www.Nano.QinetiQ.com
E-mail - nanocontact@QinetiQ.com

2. COMPOSITION / INFORMATION ON INGREDIENTS

Supplied in the following purities

- 2.1 WC 100.00% CAS No: 12070-12-1
EINECS No: 2351230

3. HAZARDS IDENTIFICATION

This powder is an experimental sample, comprised of loosely aggregated ultrafine nanometer particles. No data yet exists on the effects of such fine particles on the body. Special care should be taken to avoid ingestion, inhalation, skin contact or eye contact.

- 3.1 Tungsten carbide is not classified to be a dangerous product.
3.2 Adverse Human Health Effects: Low toxicity, inhalation of dust can cause a mild irritation of nose and throat,

4. FIRST AID MEASURES

- 4.1 Ingestion - Drink/flush mouth with plenty of water, induce vomiting and seek medical advice.
- 4.2 Skin Contact - Remove contaminated clothing, flood skin with large amounts of water and seek medical attention if irritation persists
- 4.3 Eyes - Wash out immediately with water, including under eyelids, for at least 15 mins. Seek medical advice.
- 4.4 Inhalation - Terminate exposure immediately and move to fresh air, seek medical advice if required. See Occupational Exposure Limits For MEL's / OES's consult EH40 or equivalent national standard.

5. FIRE FIGHTING MEASURES

Generally WC powder is not considered to be combustible although under special conditions powders <1µm in size when dispersed to form a dust cloud may be spontaneously combustible or explosible.

- 5.1 Suitable fire extinguishing media: Class D Dry Powder (for metal powders) extinguishers, dry sand, cement
- 5.2 Unsuitable fire extinguishing media: DO NOT USE WATER.
- 5.3 Protection of Fire Fighters
- * Use normal procedures which include wearing approved self contained breathing apparatus (NIOSH/MSHA approved) or breathing apparatus with CO filter, flame and chemical resistant clothing, hats, boots and gloves.
 - * Remove burning material to a safe area if it can be done without risk.
- 5.3 Other information
- In the case of fire, CO and CO₂ gases can be produced.

6. ACCIDENTAL RELEASE MEASURES

- 6.1 Accidental Spillage During Transport to End User
- 6.1.1 Personal Precautions
- * Avoid inhalation. Wear high efficiency particle respirator, eye protection and gloves. Keep unprotected persons away from spillage area.
- 6.1.2 Environmental Precautions
- * Prevent spillage into surface water channels, sewers, drains etc.
 - * Clean up spillage using vacuum cleaner fitted with HEPA filters or wet dust to reduce formation of airborne dust clouds.
- 6.1.3 Disposal Considerations
- * Collect spilled powders and mix with dry sand or vermiculite and store in sealed drums in dry conditions.
 - * Use an approved waste disposal contractor
- 6.2 Spillage at End User
- * Good housekeeping is essential where dust is handled
 - * Spillage should be cleaned up as soon as possible after it occurs
 - * If suction equipment is not available careful sweeping and storage as above under 6.1.3
 - * Use high efficiency particle respirator, eye protection and heavy rubber protective gloves.
 - * Wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

- 7.1 Handling
- * Avoid generation of dust clouds
 - * Avoid possible sources of heat and ignition
 - Use exhaust ventilation during handling or transfer of powders.
 - * Keep work area clean (see section 6)
 - * Wash hands thoroughly after use.
 - * Wear protective clothing.
 - * Use protective face mask if necessary
 - *
- 7.2 Storage
- * Store in the supplied containers until used.
 - * Keep in closed dry and cool room or store (< 50°C).
 - * Keep area clean and avoid spillage
 - Do not store together with strong oxidants and acids since contact with these chemicals could lead to violent
 - * reaction, fire and explosion.

8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1 Respiratory Protection**

- * Sufficient ventilation should be provided to ensure dust concentration is maintained below the Occupational Exposure Limit.
- * A dust mask rated to the finer agglomerate size is recommended if regular exposure is unavoidable. Masks are recommended in environments exceeding the nuisance dust levels.

Exposure limits: Tungsten and compounds

	Long term exposure	Short term exposure limit
	8h TWA mg m ⁻³	15 mins mg m ⁻³
soluble	1	3
insoluble	5	10

8.2 Eye Protection

- * Wear eye protection: Irritation may occur as with any dust entering the eye - wash out immediately if it occurs.

8.3 Skin Contact

- * Wear overalls
- * Barrier protection is recommended, i.e. disposable rubber gloves, rated to the finer agglomerate size
- * Wash hands thoroughly before eating drinking or smoking.

8.4 Industrial hygiene

- * Change contaminated clothing. Wash hands after working with substance.

9: PHYSICAL AND CHEMICAL PROPERTIES

9.1	Physical State	-	Fine powder
9.2	Form	-	Vapour phase condensed particles with primary particle size typically 20-100nm in size.
9.3	Colour	-	Black
9.4	Odour	-	None
9.5	P.H. (in water)	-	7
9.6	Boiling Point	-	Approx 5000°C- 6000°C
9.7	Melting Point	-	2785-2867°C
	Vapour pressure		N/A
9.8	Flash Point	-	N/A
9.9	Auto ignition temperature		No Data
9.10	Relative Density	-	15.67 gcm ⁻³
9.11	Solubility	-	Insoluble in water

10: STABILITY AND REACTIVITY**10.1 Stability**

- * Product is generally stable, although powders less than 1µm in size when dispersed in air may be pyrophoric or explosible.
- * Thermal decomposition can occur at 2500°C to 2700°C

10.2 Hazardous decomposition products : In case of fire CO and CO₂ gases can be evolved.**10.3 Substances to be avoided: Contact with strong oxidants or strong acids can lead to violent reaction, fire and explosion hazards.**

11. TOXICOLOGICAL INFORMATION	
	Most studies have shown that tungsten carbide is toxicologically inert.
11.1	Acute toxicity: No data available.
11.2	Sub-acute to chronic toxicity: In a few studies symptoms of pulmonary fibrosis were exposed by a few exposed workers. The assumption that tungsten carbide causes pneumoconiosis seems to be unconfirmed., but these studies were based on the interaction with cobalt and tungsten carbide
11.3	Experiences on man: Inhalation with dust can cause a mild irritation of nose and throat. Irritation of eyes and skin may also occur.
12. ECOLOGICAL INFORMATION	
12.1	Ecotoxicity - Tungsten carbide is insoluble in water and therefore no damaging effects on plants or water organisms are anticipated.
12.2	Removal from water : Depending on the particle size filtration or sedimentation techniques can be used to remove tungsten carbide.
13. DISPOSAL CONSIDERATIONS	
13.1	Product disposal : Dispose according to regional or national regulations relevant to the location of the consumer.
13.2	Product recyclability : The material is suitable for recycling.
13.2	Contaminated packaging : Dispose according to regional or national regulations relevant to the location of the consumer.
14. TRANSPORT INFORMATION	
	This product is not classified as dangerous/hazardous goods.
15. REGULATORY INFORMATION	
15.1	Labelling according to EC Directives: Tungsten carbide has not been classified as a hazardous product in accordance with directive 67/548/EEC. However for recommended practice refer to safety phrases given below: * S phrases 22 Do not breath dust 24 Avoid contact with skin 37 Wear suitable gloves
16. OTHER INFORMATION	
16.1	This safety information is provided in good faith and is based on the present state of our knowledge. QNL only
16.2	Attention is drawn to the hazards which may result from the misuse of these materials
16.3	All information contained in this documentation is based upon current knowledge

MATERIAL SAFETY DATA SHEET



Complies with U.S. OSHA
E.C. Guideline 91/155/EEC:
Revision: 1
Last Revision: September 2004
Replaces: August 1999

EMERGENCY TELEPHONE NUMBERS:
NATIONAL RESPONSE CENTER: 1-800-424-8802
CHEMTREC U.S. and CANADA: 1-800-424-9300
CHEMTREC International: 1-202-483-7616 (Collect)

Users of this product are requested to study this data sheet to learn the product's characteristics so that the product can be used safely. If the material is resold, the purchaser should be furnished a copy of this data sheet and the information should be made available to all users.

SECTION 1 Chemical Product and Company Identification

Product Trade Name 40%, 50%, 65%, or 85% Vanadium-Aluminum

Article No. V8, V9, V10

Company Identification Stratcor, Inc. Tel.: (716) 286-4000
137 47th Street Fax: (716) 286-1361
Niagara Falls, New York 14304; U.S.A.

Inquiry Department Stratcor, Inc., Pittsburgh, PA; U.S.A.
Tel.: 1-412-787-4500; www.stratcor.com

SECTION 2 Composition and Information on Ingredients

Chemical Characterization:

Chemical Description Vanadium-Aluminum Alloy.

UN Number None.

DOT Guide None.

CAS No. 71243-93-1

EINECS No. Not listed.

This substance contains only vanadium-aluminum alloy with trace impurities.

SECTION 3 Hazards Identification

Potential Hazards for Humans and Animals:

Eye Contact Dust may irritate. Chips may cause corneal injury.

Skin Contact Dust may cause contact dermatitis with itching and rash.

Inhalation Dust may irritate the respiratory tract and cause chest tightness, wheezing, and coughing.

Ingestion No expected effects..

SECTION 4 First-Aid Measures

General Information:

Inhalation Leave dusty area. Get breathing assistance if necessary.

Skin Wash with soap and water.

Eyes Flush with water 15 minutes to remove particles. See an ophthalmologist.

Ingestion No expected emergency care anticipated.

SECTION 5 Fire-Fighting Measures

Suitable Extinguishing Media	Class D fire. Use dry chemical, completely-dry sand or carbon dioxide to smother.
Extinguishing Media Not to Be Used	Water sprayed on burning material can liberate hydrogen gas.
Special Exposure Hazards	Avoid creating dust. Dust is combustible.
Special Protective Equipment for Fire Fighters	Full protective equipment including positive pressure-breathing apparatus..

SECTION 6 Accidental- Release Measures

Personal Precautions	Skin, eye, and respiratory protection as needed by conditions.
Environmental Precautions	Not an environmentally-sensitive material.
Cleaning Methods	Vacuum preferred – or sweeping.
Additional Information	Avoid decontamination procedures which create airborne dusting. Use ventilation if necessary to control dusting. Avoid use of compressed air. Keep ignition sources away from spilled area.

SECTION 7 Handling and Storage

Handling	Avoid procedures that cause dust. Keep away from sparks, heat, and open flame. Chunks may cause razor-sharp edges.
Milling	Precautions should be taken when crushing or milling this material to a fine-particle size (nominally less than 100 mesh with over 50% less than 200 mesh). Consideration should be given to performing these operations in an inert atmosphere or under vacuum.
Storage	Material should be kept dry and in closed containers. Keep away from sparks, heat, and open flame in a well-ventilated area away from combustible materials.

SECTION 8 Exposure Controls and Personal Protection

Recommendations on Equipment Designs	Proper dust collection. Minimize dust during dumping operations. Avoid procedures that cause sparks.
Occupational Exposure Limit	1 mg vanadium/m ³ for vanadium alloys (NIOSH) 5 mg/m ³ for respirable dust (PNOR)** (OSHA) 15 mg/m ³ for total dust (PNOR)** (OSHA) **PNOR = Particles Not Otherwise Regulated.
Personal Safety Equipment:	
Respiratory Protection	Use respirators approved by NIOSH/MSHA or a competent local authority.
Hand Protection	Use protective gloves and barrier creams.
Eye Protection	Use face shields, face screens, goggles, or safety glasses with side shields.
Skin Protection	Not normally required. Chunks may have razor-sharp edges.
Personal Hygiene	Wash with soap and water after handling and before eating, drinking, or smoking.

SECTION 9

Physical and Chemical Properties

This MSDS reflects available research data and is not a product or quality specification document.

Appearance:	
Physical State	Solid.
Form	Granules or lumps.
Color	Silver metallic.
Odor	None.
Change in Physical State:	
Melting Point	1699 to 1873°C (3090 to 3403°F).
Boiling Point	Not available.
Vapor Pressure	Essentially zero.
Flash Point	Not applicable.
Flammability	Dust is combustible.
Ignition Temperature	Not applicable.
Auto Flammability	Not applicable.
Oxidizing Properties	None.
Explosive Properties	Dust is combustible.
Bulk Density	2.00 to 2.16 g/cm ³ (125 to 135 lb./ft ³)
Solubility in Water (20°C)	Insoluble
pH Value	Not applicable.

SECTION 10

Stability and Reactivity

Conditions to Avoid	Situations which cause dusting.
Incompatible Materials	Strong acids, nitric acid, oxygen-enriched atmospheres.
Hazardous Decomposition	None

SECTION 11

Toxicological Information

Acute Toxicity	None located.
Irritation	Mild respiratory irritant. May be a mild skin irritant.
Chronic Toxicity	None noted.
Carcinogen Status:	
IARC	Not listed, International Agency for Research on Cancer
NTP Annual Report	Not listed, National Toxicology Program
OSHA Subpart Z	Not listed.
U.S. EPA Genetic Toxicity	Not listed, Genetic Toxicology Program
Mutagen Status	Not listed.
Teratogen Status	Not listed.

SECTION 12

Ecological Information

Persistence and Degradability	Will slowly oxidize to vanadium oxide.
Aquatic Toxicity and Other Data Relating to Exotoxicity	Not located. This substance is not soluble in water.

SECTION 13 Disposal Considerations

Product Recommendation	This product contains no ingredients which are listed as Hazardous Substances by the U.S. EPA.
Contaminated-Packaging Recommendation	This product does not possess characteristics which may qualify as hazardous waste. Waste and containers may be disposed of in accordance with applicable local guidelines. Unused product may be returned to supplier for recycling.

SECTION 14 Transport Information

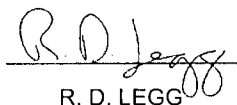
U.N. packaging requirements shall be met for air and non-U.S. shipments.	
Proper Shipping Description	XX% VANADIUM-ALUMINIUM ALLOY No special labeling, placarding, or identification is required by any agency.
Empty-Container Description	None required.
Land Transport	U.S. DOT or appropriate local guidelines.
Inland-Waterway Transport	U.S. DOT or appropriate local guidelines.
Sea Transport	IMO / IMDG Code. Container shipments require a Container Packing Certificate.
Air Transport	ICAO-IT and IATA-DGR; no limit on quantity.

SECTION 15 Regulatory Information

Classification According to U.N. Guidelines	None.
E.C. Danger Symbol	None.
R-Phrases	None.
S-Phrases	None.
U.S. EPA TSCA Inventory	Ingredients reported in the initial EPA TSCA Inventory.
U.S. EPA SARA III, Section 302 and 304	Notification may be required. Check local regulations.
U.S. EPA SARA III, Section 311 and 312	Notification may be required. Check local regulations.
U.S. EPA SARA III, Section 313	None required.
Non-U.S. Requirements	Refer to specific national guidelines.

SECTION 16 Other Information

Data Sheet Prepared by:


R. D. LEGG

9-1-04

Plant Manager; Niagara Falls, N. Y.; U.S.A.

Strategic Minerals Corporation believes that the data on this sheet are correct as of the effective date and that the opinions given reflect those of qualified experts. Since Strategic Minerals cannot control the product or its use, it is the user's responsibility to use the product safely. The data on this sheet apply only to products sold by corporate subsidiaries of Strategic Minerals and may not apply to products sold by others.

STRATCOR, Inc.
A Subsidiary of Strategic Minerals Corporation
30 Main Street, Danbury, Connecticut 06810

The material difference is value.

MSDS Number: A7686 * * * * * Effective Date: 08/15/05



ASPIRIN

1. Product Identification

Synonyms: 2-(acetyloxy)benzoic acid; salicylic acid acetate; acetylsalicylic acid
CAS No.: 50-78-2
Molecular Weight: 180.15
Chemical Formula: C₉H₈O₄
Product Codes: 2945

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Acetylsalicylic Acid	50-78-2	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC RESPIRATORY REACTION. POSSIBLE BIRTH DEFECT HAZARD. MAY CAUSE BIRTH DEFECTS BASED ON ANIMAL DATA. AFFECTS THE RESPIRATORY SYSTEM, LIVER, KIDNEYS, EYES, SKIN AND BLOOD.

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Exposure may cause an allergy to develop.

Ingestion:

Extremely large oral doses may cause mild burning pain in the mouth and stomach, anorexia, nausea, vomiting, intense thirst, diarrhea, dizziness, irritability, confusion, coma, teratogenic effects, and death from respiratory failure. The mean lethal dose of aspirin by mouth probably lies between 20 and 30 grams in adults.

Skin Contact:

May cause irritation.

Eye Contact:

Causes irritation. Contact cause severe pain and may cause eye damage.

Chronic Exposure:

Repeated ingestion may cause tinnitus, abnormal bleeding (gastric or retinal), gastric ulcer, weight loss, mental deterioration, and skin eruptions. May cause kidney and liver damage in susceptible individuals.

Aggravation of Pre-existing Conditions:

Persons with a history of asthma or allergies to aspirin may be at an increased risk upon exposure to this substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

Skin Contact:

In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation develops or persists.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosive dust concentration: 40 g/m³.

Fire Extinguishing Media:

Water spray, foam, or dry chemical.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained

breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

~~Remove all sources of ignition.~~ Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: **Clean up spills in a manner that does not disperse dust into the air.** Use non-sparking tools and equipment. ~~Reduce airborne dust and prevent scattering by moistening with water.~~ Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- ACGIH Threshold Limit Value (TLV): 5 mg/m³ (TWA)

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Transparent, colorless crystals.

Odor:

Odorless.

Solubility:

1g/100g water @ 37C.

Specific Gravity:

1.40

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

140C (284F)

Melting Point:

135C (275F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable in dry air.

Hazardous Decomposition Products:

Decomposes to acetic acid and salicylic acids in the presence of moist air. Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers, alkali hydroxides, boiling water, and antipyrine, aminopyrine, methamine, phenol, phenyl salicylate, and sodium bicarbonate.

Conditions to Avoid:

Moisture.

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 200 mg/kg; investigated as a mutagen, reproductive effector.

Reproductive Toxicity:

Reproductive effects recorded on humans.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Acetylsalicylic Acid (50-78-2)	No	No	None

12. Ecological Information

Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material is not expected to evaporate significantly. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information


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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Acetylsalicylic Acid (50-78-2)                Yes  Yes   Yes    Yes

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Acetylsalicylic Acid (50-78-2)                Yes   Yes   No     Yes

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ      TPQ      List  Chemical Catg.
-----
Acetylsalicylic Acid (50-78-2)                No    No    No     No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
261.33  8(d)
-----
Acetylsalicylic Acid (50-78-2)                No      No      No

```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: None allocated.

Poison Schedule: S2

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC RESPIRATORY REACTION. POSSIBLE BIRTH DEFECT HAZARD. MAY CAUSE BIRTH DEFECTS BASED ON ANIMAL DATA. AFFECTS THE RESPIRATORY SYSTEM, LIVER, KIDNEYS, EYES, SKIN AND BLOOD.

Label Precautions:

Do not breathe dust.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

New MSDS.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

ANACHEMIA CHEMICALS INC -- MANNITOL -- 6810-00-149-0577

===== Product Identification =====

Product ID:MANNITOL
 MSDS Date:04/16/1996
 FSC:6810
 NIIN:00-149-0577
 Status Code:A
 MSDS Number: CKWYM
 === Responsible Party ===
 Company Name:ANACHEMIA CHEMICALS INC
 Address:3 LINCOLN BLVD
 City:ROUSES POINT
 State:NY
 ZIP:12979
 Country:US
 Info Phone Num:518-297-4444
 Emergency Phone Num:518-297-4444 / 514-489-5711
 Chemtrec Ind/Phone:(800)424-9300
 CAGE:4A444

===== Contractor Identification =====

Company Name:ANACHEMIA
 Address:3 LINCOLN BLVD
 Box:City:ROUSES POINT
 State:NY
 ZIP:12979
 Country:US
 Phone:518-297-4444
 CAGE:HO801
 Company Name:ANACHEMIA CANADA
 Address:255 NORMAN H8R 1A3
 Box:City:VILLE ST. PIERRE (MONTREAL)
 State:PQ
 Country:CN
 Phone:514-489-5711;518-297-4444
 CAGE:36842
 Company Name:ANACHEMIA CHEMICALS INC
 Address:3 LINCOLN BLVD
 Box:City:ROUSES POINT
 State:NY
 ZIP:12979
 Country:US
 Phone:518-297-4444
 CAGE:4A444

===== Composition/Information on Ingredients =====

Ingred Name:MANNITOL
 CAS:69-65-8
 RTECS #:OP2060000
 Minumum % Wt:60.
 Maxumum % Wt:100.

===== Hazards Identification =====

LD50 LC50 Mixture:ACUTE ORAL (LD50): 13500 MG/KG (RAT).
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic: EFFECTS OF ACUTE EXPOSURE: MAY BE HARMFUL BY INHALATION OR INGESTION. EYES: MAY CAUSE IRRITATION. SKIN: MAY CAUSE IRRITATION. INHALATION: NO SPECIFIC INFORMATION IS AVAILABLE ON THIS MATERIAL. INGESTION: NO SPECIFIC INFORMATION IS AVAILABLE ON THIS MATERIAL. EFFECTS OF CHRONIC OVEREXPOSURE: TO THE BEST OF (THE MANUFACTURER'S) KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICITY OF THIS SUBSTANCE HAS NOT BEEN FULLY INVESTIGATED.

===== First Aid Measures =====

First Aid: EYE CONTACT: IMMEDIATELY FLUSH WITH COPIOUS QUANTITIES OF WATER FOR AT LEAST 15 MINUTES HOLDING LIDS APART TO ENSURE FLUSHING OF ENTIRE SURFACE. CALL A PHYSICIAN. SKIN CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSING. INHALATION: REMOVE PATIENT TO FRESH AIR. ADMINISTER APPROVED OXYGEN SUPPLY IF BREATHING DIFFICULT; ADMINISTER ARTIFICIAL RESPIRATION OR CPR IF BREATHING HAS CEASED. CALL A PHYSICIAN. INGESTION: IF CONSCIOUS, WASH OUT MOUTH WITH WATER. CALL A PHYSICIAN.

===== Fire Fighting Measures =====

Flash Point Method: CC

Flash Point: >93.C, 199.4F

Lower Limits: NOT AVAIL

Upper Limits: NOT AVAIL

Extinguishing Media: USE DRY CHEMICAL, CARBON DIOXIDE, ALCOHOL-RESISTANT FOAM OR WATER SPRAY.

Fire Fighting Procedures: WEAR ADEQUATE PERSONAL PROTECTION TO PREVENT CONTACT WITH MATERIAL OR ITS COMBUSTION PRODUCTS. SELF-CONTAINED BREATHING APPARATUS (NIOSH APPROVED -) WITH A FULL FACEPIECE OPERATED IN A PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

Unusual Fire/Explosion Hazard: THIS MATERIAL IN POWDER FORM IS CAPABLE OF CREATING A DUST EXPLOSION. EMITS TOXIC FUMES UNDER FIRE CONDITIONS. FIRE DEGRADATION PRODUCTS: OXIDES OF CARBON (CO, CO₂).

===== Accidental Release Measures =====

Spill Release Procedures: ELIMINATE ALL SOURCES OF IGNITION. SWEEP UP AND PLACE INTO CONTAINER FOR DISPOSAL. AVOID RAISING DUST. VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICK-UP IS COMPLETE. DO NOT EMPTY INTO DRAINS. DO NOT TOUCH SPILLED MATERIAL. PROTECTIVE CLOTHING IN CASE OF SPILL OR LEAK: WEAR RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES.

===== Handling and Storage =====

Handling and Storage Precautions: STORE IN COOL PLACE AWAY FROM HEATED AREAS, SPARKS, AND FLAME. STORE IN A WELL VENTILATED AREA. STORE AWAY FROM INCOMPATIBLE MATERIALS. DO NOT ADD ANY OTHER MATERIAL TO THE CONTAINER. DO NOT WASH DOWN THE DRAIN. DO NOT BREATHE DUST. KEEP CONTAINER TIGHTLY CLOSED & DRY. MANIPULATE (OTHER PRECAUTIONS)

Other Precautions: N/P. HANDLING AND STORAGE PRECAUTIONS (CONT): IN A WELL VENTILATED AREA OR UNDER AN ADEQUATE FUME HOOD. AVOID RAISING DUST. HANDLE AND OPEN CONTAINER WITH CARE. MINIMIZE DUST GENERATION AND EXPOSURE - USE DUST MASK OR APPROPRIATE PROTECTION. THIS PRODUCT MUST BE MANIPULATED BY (SUPPLEMENTAL SAFETY AND HEALTH)

===== Exposure Controls/Personal Protection =====

Respiratory Protection:A (NIOSH APPROVED -) RESPIRATOR IS ADVISED IN THE ABSENCE OF PROPER ENVIRONMENTAL CONTROLS.
 Ventilation:LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT POINT OF USE.
 Protective Gloves:IMPERVIOUS GLOVES.
 Eye Protection:SPLASH GOGGLES (ANSI APPROVED -).
 Other Protective Equipment:PROTECTIVE CLOTHING: IMPERVIOUS APRON, COVERALLS, AND/OR OTHER PROTECTIVE CLOTHING. SUFFICIENT TO PROTECT SKIN. MAKE EYE BATH AND EMERGENCY SHOWER AVAILABLE. ENSURE THAT (WORK HYGENIC PRACTICES)
 Work Hygienic Practices:N/P. OTHER PROTECTIVE EQUIPMENT (CONT): EYEWASH STATION AND SAFETY SHOWER IS PROXIMAL TO THE WORK-STATION LOCATION. DO NOT WEAR CONTACT LENSES.
 Supplemental Safety and Health
 NFPA: N/P. SUPERCEDES: N.P. OTHER PRECAUTIONS (CONT): QUALIFIED PERSONNEL. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. WASH WELL AFTER USE. IN ACCORDANCE WITH GOOD STORAGE AND HANDLING PRACTICES. DO NOT ALLOW SMOKING OR FOOD CONSUMPTION WHILE HANDLING.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:NOT AVAILABLE
 Melt/Freeze Pt:=167.C, 332.6F
 M.P/F.P Text:167-170C
 Vapor Pres:NOT AVAILABLE
 Vapor Density:NOT AVAIL
 Spec Gravity:1.52 (WATER=1)
 pH:NOT AVAILABLE
 Evaporation Rate & Reference:NOT AVAILABLE
 Solubility in Water:SOLUBLE IN COLD WATER.
 Appearance and Odor:SOLID WHITE POWDER; ODORLESS.
 Percent Volatiles by Volume:0% @ 21C

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 OXIDIZING AGENTS, BASES.
 Stability Condition to Avoid:STABLE.
 Hazardous Decomposition Products:HAZARDOUS DECOMP PRODUCTS: NOT AVAILABLE. REACTION PRODUCTS: NOT AVAILABLE.
 Conditions to Avoid Polymerization:WILL NOT OCCUR.

===== Toxicological Information =====

Toxicological Information:TOXICITY VALUES OF HAZARDOUS INGREDIENTS:
 MANNITOL: ORAL (LD50): ACUTE: 13500 MG/KG (RAT), 22000 MG/KG (MOUSE). INTRAPERITONEAL (LD50): ACUTE: 14000 MG/KG (MOUSE).
 INTRAVENOUS (LD50): ACUTE: 9690 M G/KG (RAT). 7470 MG/KG (MOUSE).

===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE OR MIX MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN CHEMICAL INCINERATOR EQUIPPED WITH AFTER BURNER AND SCRUBBER. ACCORDING TO ALL APPLICABLE REGULATIONS.

===== MSDS Transport Information =====

Transport Information:TDG ROAD/RAIL: NOT CONTROLLED UNDER TDG (CANADA).
NOT APPLICABLE (PIN & PG).

=====
===== Regulatory Information =====

Federal Regulatory Information:NOT CONTROLLED UNDER WHMIS (CANADA).

=====
===== Other Information =====

Disclaimer (provided with this information by the compiling agencies):
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particular situation.

Material Safety Data Sheet

L-(-)-Sorbose, 99%

ACC# 41613

Section 1 - Chemical Product and Company Identification

MSDS Name: L-(-)-Sorbose, 99%**Catalog Numbers:** AC225960000, AC225961000, AC225962500, AC225965000, AC9465909, AC9465935**Synonyms:****Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
87-79-6	L-(-)-Sorbose	99.0	201-771-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Caution! May cause irritation. This is expected to be a low hazard for usual industrial handling.**Target Organs:** None known.**Potential Health Effects****Eye:** Dust may cause mechanical irritation.**Skin:** Low hazard for usual industrial handling.**Ingestion:** Expected to be a low ingestion hazard.**Inhalation:** Low hazard for usual industrial handling. Inhalation of dust may cause respiratory tract irritation.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: Not published.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
L-(-)-Sorbitose	none listed	none listed	none listed

OSHA Vacated PELs: L-(-)-Sorbitose: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: white
Odor: Not available.
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: 158 - 160 deg C
Decomposition Temperature: Not available.
Solubility: 550 G/L (17°C)
Specific Gravity/Density: Not available.
Molecular Formula: C₆H₁₂O₆
Molecular Weight: 180.16

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, dust generation.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 87-79-6: WG3195025
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 87-79-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 87-79-6 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 87-79-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 87-79-6: No information available.

Canada - DSL/NDSL

CAS# 87-79-6 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #3 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

FUJISAWA INC (FORMERLY LYPHOMED INC) -- ASCORBIC ACID -- 6505-00F039438

===== Product Identification =====

Product ID:ASCORBIC ACID
 MSDS Date:02/19/1988
 FSC:6505
 NIIN:00F039438
 MSDS Number: BWYX
 === Responsible Party ===
 Company Name:FUJISAWA INC (FORMERLY LYPHOMED INC)
 Address:2020 RUBY
 City:MELROSE PARK
 State:IL
 ZIP:60160-5000
 Country:US
 Info Phone Num:708-450-7569/7500
 Emergency Phone Num:708-450-7569/7500
 CAGE:GO395

=== Contractor Identification ===
 Company Name:FUJISAWA INC (FORMERLY LYPHOMED INC)
 Address:2020 RUBY
 City:MELROSE PARK
 State:IL
 ZIP:60160-5000
 Country:US
 Phone:708-450-7569/7500
 CAGE:GO395
 Company Name:LYPHOMED INC DIV OF FUJISAWA USA INC
 Address:2020 RUBY ST
 Box:City:MELROSE PARK
 State:IL
 ZIP:60160-1112
 Country:US
 Phone:312-345-6170
 CAGE:60567

===== Composition/Information on Ingredients =====

Ingred Name:L-ASCORBIC ACID, ASCORBIC ACID
 CAS:50-81-7
 RTECS #:CI7650000

Ingred Name:WATER
 CAS:7732-18-5
 RTECS #:ZC0110000

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:MAY CAUSE EYE/SKIN/RESPIRATORY TRACT
 IRRITATION & HYPERSENSITIZATION. MAY BE ABSORBED THROUGH THE SKIN.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:IRRITATION, STOMACH CRAMPS, DIARRHEA, NAUSEA,
 VOMITING, INCREASE IN URINATION, HEADACHE, FLUSHING/REDNESS OF THE
 SKIN.

===== First Aid Measures =====

First Aid:INHALATION: REMOVE TO FRESH AIR. INGESTION: FLUSH MOUTH OUT W/WATER. SKIN/EYES: FLUSH W/WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, DRY CHEMICAL, CO2, FOAM AS APPROPRIATE FOR SURROUNDING FIRE.

Fire Fighting Procedures:WEAR SELF CONTAINED BREATHING APPARATUS & PROTECTIVE CLOTHING.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT. VACUUM W/A VACUUM CLEANER HAVING A HIGH EFFICIENCY PARTICULATE FILTER/ABSORB LIQUID W/PAPER TOWELS. WIPE WORKING SURFACES TO DRYNESS, THEN WASH W/SOAP & WATER.

===== Handling and Storage =====

Handling and Storage Precautions:EXPOSURE TO LIGHT MAY CAUSE DECOMPOSITION.

Other Precautions:WHEN HANDLING PHARMACEUTICAL PRODUCTS, AVOID ALL CONTACT & INHALATION OF DUST/FUMES/MISTS/VAPORS ASSOCIATED W/PRODUCT.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:WEAR A NIOSH APPROVED RESPIRATOR.

Ventilation:LOCAL EXHAUST RECOMMENDED.

Protective Gloves:DISPOSABLE SURGICAL LATEX

Eye Protection:SAFETY GOGGLES

Other Protective Equipment:DISPOSABLE PROTECTIVE APPAREL

Work Hygienic Practices:REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

pH:5.5-7

Solubility in Water:COMPLETE

Appearance and Odor:CLEAR, PALE YELLOW SOLUTION W/PRACTICALLY NO ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

Stability Condition to Avoid:LIGHT.

Hazardous Decomposition Products:TOXIC FUMES WHEN HEATED TO DECOMPOSITION.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IAW/FEDERAL, STATE & LOCAL REGULATIONS.

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WARD'S NATURAL SCIENCE ESTABLISHMENT INC. -- CAFFEINE --

===== Product Identification =====

Product ID:CAFFEINE
MSDS Date:08/02/1995
FSC:NIIN:Submitter:D DG
Status Code:A
MSDS Number: CJZGW
=== Responsible Party ===
Company Name:WARD'S NATURAL SCIENCE ESTABLISHMENT INC.
Box:92912
City:ROCHESTER
State:NY
ZIP:14692-9012
Country:US
Info Phone Num:716-359-2502
Emergency Phone Num:716-359-2502
Resp. Party Other MSDS Num.:CC 25
Preparer's Name:MICHAEL RASZEJA
Chemtrec Ind/Phone:(800)424-9300
CAGE:EO227

=== Contractor Identification ===

Company Name:WARD'S NATURAL SCIENCE ESTABLISHMENT INC.
Box:92912
City:ROCHESTER
State:NY
ZIP:14692-9012
Country:US
Phone:716-359-2502
CAGE:EO227
Company Name:WARDS NATURAL SCIENCE ESTABLISHMENT INC
Address:5100 W HENRIETTA RD
Box:92912
City:ROCHESTER
State:NY
ZIP:14692-9012
Country:US
Phone:(716) 359-2502
Contract Num:MDA414-99-A-0024-0050
CAGE:63759

===== Composition/Information on Ingredients =====

Ingred Name:CAFFEINE
CAS:58-08-2
RTECS #:EV6475000
= Wt:100.

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL-MOUSE LD50: 127MG/KG
Health Hazards Acute and Chronic:INGESTION AND INHALATION: NO TLV
ESTABLISHED. MAY ACT AS STIMULANT IF EXCESSIVE INGESTION. LARGE
DOSES (>1G) MAY CAUSE PALPITATION, EXCITEMENT, INSOMNIA, DIZZINESS,
HEADACHE AND VOMITING. SKIN/EYES: AS DUST OR VAPOR MAY BE AN
IRRITANT. EXERCISE APPROPRIATE PROCEDURES TO MINIMIZE POTENTIAL
HAZARDS.
Effects of Overexposure:INGESTION/INHALATION: PALPITATION, EXCITEMENT,

INSOMNIA, DIZZINESS, HEADACHE AND VOMITING. SKIN/EYES: IRRITANT.
Medical Cond Aggravated by Exposure:NONE SPECIFIED

===== First Aid Measures =====

First Aid:INGESTION:I F SWALLOWED ,IF CONSCIOUS, GIVE 1-2 GLASSES OF WATER TO DRINK, INDUCE VOMITING AND CALL PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. SKIN: FLUSH WITH WATER, THEN WASH WITH MILD SOAP AND WATER. EYES: FLUSH THOROUGHLY WITH WATER FOR 15 MINUTES, LIFTING UPPER AND LOWER EYELIDS OCCASIONALLY. GET MEDICAL ATTENTION. INHALATION: REMOVE TO FRESH AIR.I F ILLNESS OR DISCOMFO RT DEVELOPS, GET MEDICAL ATTENTION.

===== Fire Fighting Measures =====

Flash Point:=925.C, 1697.F
IGNITION TEMP
Lower Limits:2
Upper Limits:16
Extinguishing Media:USE ANY MEDIA SUITABLE FOR EXTINGUISHING SUPPORTING FIRE.
Fire Fighting Procedures:IN FIRE CONDITIONS, WEAR A NIOSH/MSHA-APPROVED, SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING.
Unusual Fire/Explosion Hazard:WHEN HEATED TO DECOMPOSITION,EMITS TOXIC FUMES OF NITROUS OXIDES AND OTHER HAZARDOUS MATERIALS; CAN REACT VIGOROUSLY WITH OXIDIZING MATERIALS. SEVERE (BUREAU OF MINES EXPLSOION HAZARD RATINGS) AS DUST .

===== Accidental Release Measures =====

Spill Release Procedures:WEAR PROTECTIVE SAFETY EQUIPMENT AND USE ADEQUATE VENTILATION.AVOID MAKING DUST. SWEEP UP AND PLACE IN SUITABLE CONTAINER FOR DISPOSAL. FLUSH SPILL AREA WITH WATER. DO NOT ALLOW WATER TO POLLUTE WATER WAYS AND STREAMS. RECOVER FOR USE IF NOT CONTAMINATED.
Neutralizing Agent:NONE SPECIFIED

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN COOL, DRY PLACE. WASH THOROUGHLY AFTER HANDLING. AVOID BREATHING DUST OR VAPOR. DO NOT INGEST. REMOVE AND WASH CONTAMINATED CLOTHING. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE.
Other Precautions:THE FDA HAS RECENTLY PROPOSED REMOVAL OF CAFFEINE FROM ITS "GENERALLY RECOGNIZED AS SAFE" LIST AND IS GATHERING ADDITIONAL INFORMATION. CONCERNS WITH EXCESSIVE USE INCLUDE POSSIBLE REPRODUCTIVE EFFECTS TO FETAL CRANIOFACIAL AREA, MUCULOSKELETAL SYSTEM, POSSIBLE BLADDER CANCER AND MIOCARDIAL INFACION .

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NONE SHOULD BE NEEDED IN NORMAL LABORATORY HANDLING.IF DUSTY CONDITIONS PREVAIL,WORK IN A VENTILATION HOOD OR WEAR A NIOSH/MSHA APPROVED DUST MASK.
Ventilation:LOCAL/MECHANICAL(GENERAL):RECOMMENDED
Protective Gloves:RUBBER
Eye Protection:CHEMICAL SAFETY GLASSES
Other Protective Equipment:GOGGLES, LAB COAT, VENTILATION HOOD, PROPER GLOVES AND EYE WASH STATION.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING. AVOID BREATHING DUST OR VAPOR. DO NOT INGEST. REMOVE AND WASH CONTAMINATED CLOTHING.

Supplemental Safety and Health

WARD'S P/N: 39W0865 ***OTHER PRECAUTIONS: FOR LABORATORY USE ONLY. NOT FOR DRUG, FOOD OR HOUSEHOLD USE. KEEP OUT OF REACH OF CHILDREN.

===== Physical/Chemical Properties =====

HCC:T2

Boiling Pt:=178.C, 352.4F

Melt/Freeze Pt:=238.C, 460.4F

M.P/F.P Text:SUBLIMES AT

Vapor Pres:760

Spec Gravity:1.23

Solubility in Water:1G DISSILVES IN 46ML H2O

Appearance and Odor:WHITE NEEDLES OR WHITE POWDER; NO ODOR

Percent Volatiles by Volume:0.5%

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZERS,HOT ALKALIES,CHLORINE WATER.

Stability Condition to Avoid:EXCESSIVE TEMPERATURES AND HEAT.

Hazardous Decomposition Products:WHEN HEATED TO DECOMPOSITION, EMITS TOXIC FUMES OF NITROUS OXIDES,CARBON MONOXIDE AND CARBON DIOXIDE.

===== Toxicological Information =====

Toxicological Information:RTECS NO. EV6475000 TOXICITY DATA: ORAL-CHILD LDLO: 320 MG/KG ORAL-WOMAN LDLO: 1000 MG/KG, ORAL-INFANT TDLO: 14,700 UG/KG, ORAL-MOUSE LD50: 127 MG/KG.

===== Disposal Considerations =====

Waste Disposal Methods:DISCHARGE, TREATMENT OR DISPOSAL MAY BE SUBJECT TO FEDERAL,STATE OR LOCAL LAWS. THESE DISPOSAL GUIDELINES ARE INTENDED FOR THE DISPOSAL OF CATALOG-SIZE QUANTITIES ONLY. DISPOSE OF IN AN APPROVED INCI NERATOR.

===== MSDS Transport Information =====

Transport Information:D.O.T.: POISONOUS SOLIDS, N.O.S., (CAFFEINE), 6.1, UN 2811.

===== Other Information =====

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MATERIAL SAFETY DATA SHEET

NYSTATIN

PADDOCK LABORATORIES, INC. 3101 LOUISIANA AVENUE NORTH MINNEAPOLIS, MINNESOTA 55427 PHONE: (763)-546-4676	EMERGENCY ASSISTANCE: CHEMTREC 800-424-9300 202-483-7616 PADDOCK TECH. ASST. 800-328-5113
---	---

DATE PREPARED: 5-10-89 BY: Patrick L. Johnson

SECTION 1 - PRODUCT IDENTIFICATION AND HAZARDOUS COMPONENTS

PRODUCT: Nystatin, USP

SYNONYMS: Mycostatin, Fungicidin, Diastatin

MOLECULAR FORMULA: $C_{47}H_{75}NO_{17}$

CHEMICAL FAMILY: Polyene antifungal antibiotic

INGREDIENT (CAS #)	%	OSHA PEL	ACGIH TLV
Nystatin (1400-61-9)	100	N/A	N/A

SECTION 2 - PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT: N/A VAPOR PRESSURE: N/A

MELTING POINT: 160°C (Decomposes) VAPOR DENSITY: Negligible

SPECIFIC GRAVITY: N/A (WATER = 1) EVAPORATION RATE: N/A (BUTYL ACETATE = 1)

WATER SOLUBILITY: 4.0 mg/ml WATER REACTIVE: No

APPEARANCE AND ODOR: Yellow to light tan, hygroscopic powder with an odor suggestive of cereals.

SECTION 3 - FIRE AND EXPLOSION DATA

FLASH POINT (METHOD): N/A AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS: LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: Water spray, dry chemical, carbon dioxide, or foam as appropriate for surrounding fire and materials.

SPECIAL FIRE FIGHTING PROCEDURES: As with all fires, evacuate all personnel to a safe area. Firefighters should use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: As with any organic compound, this material is assumed to combustible in dust form and will produce toxic carbon monoxide and dioxide gases when heated to decomposition.

SECTION 4 - REACTIVITY HAZARD DATA

STABILITY: Stable (X) Unstable ()

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid exposure to heat and moisture.

HAZARDOUS DECOMPOSITION PRODUCTS: As with any organic compound, when heated to decomposition this material will emit toxic carbon monoxide and dioxide gases.

HAZARDOUS POLYMERIZATION: May Occur () Will Not Occur (X)

SECTION 5 - HEALTH HAZARD DATA

TOXICITY: No toxicity data established for this material.

CARCINOGEN LISTED BY: NTP Yes () No (X)
IARC Yes () No (X)
OSHA Yes () No (X)
Other Yes () No (X)

ROUTES OF ENTRY: Inhalation, ingestion.

HEALTH HAZARDS:

ACUTE: Eye, skin, and/or respiratory tract irritation.

CHRONIC: Possible hypersensitization.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Possible allergic reaction to dust if inhaled, ingested, or in contact with skin.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Hypersensitivity to the material.

EMERGENCY FIRST AID PROCEDURES: Remove from exposure and remove contaminated clothing. Persons developing serious allergic reactions must receive immediate medical attention. Upon eye or skin contact, flush the affected area with large amounts of water.

SECTION 6 - CONTROL AND PROTECTIVE MEASURES

RESPIRATORY PROTECTION: Wear an approved dust mask or respirator.

PROTECTIVE GLOVES: Rubber.

EYE PROTECTION: Safety goggles.

VENTILATION: Local ventilation recommended.

OTHER PROTECTIVE EQUIPMENT: Appropriate laboratory apparel.

HYGIENIC WORK PRACTICES: Wash clothing before reuse. Wash thoroughly after working with this material. Avoid wearing contact lenses when working with chemicals due to the possibility of increased severity of eye injury.

SECTION 7 - HANDLING AND STORAGE PRECAUTIONS

HANDLING PRECAUTIONS: Decomposes upon exposure to heat, light, and oxygen.

STORAGE PRECAUTIONS: **Keep refrigerated (2-8°C)** in tight, light resistant containers.

OTHER PRECAUTIONS: Avoid contact with eyes, skin or clothing. Avoid breathing the dust. Wash clothes before reuse. Wash thoroughly after handling. Do not eat, drink or smoke near this material.

SECTION 8 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL OR DISCHARGE: Wear an approved respirator and rubber gloves. Vacuum or sweep up spillage and place in a tight container for disposal. Avoid contact with dust. Ventilate area and wash spill site with water. Wash clothing and protective equipment before reuse.

WASTE DISPOSAL METHOD: Landfill or incinerate according to all local, state, federal, and environmental regulations.

SECTION 9 - DISCLAIMER

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DEFINITIONS OF ABBREVIATIONS USED:

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstract Service

IARC: International Agency for Research on Cancer

IDLH: Immediately Dangerous to Life or Health level

LC50: Median Lethal Concentration

LD50: Median Lethal Dose

N/A: Not available

NTP: National Toxicology Program

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit

TLV: Threshold Limit Value

Section V Reactivity Data			
Stability	Unstable		Conditions to Avoid
	Stable	X	
Incompatibility (<i>Materials to Avoid</i>) Can react with oxidizing materials.			
Hazardous Decomposition of Byproducts Carbon dioxide and carbon monoxide may form when heated to decomposition.			
Hazardous Polymerization	May Occur		Conditions to Avoid Air, heat, and dusting conditions.
	Will Not Occur	X	
Section VI Health Hazard Data			
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Health Hazards (<i>Acute and Chronic</i>) Inhalation: may irritate the respiratory tract. Ingestion: Based on animal data, this material is presumed to be only slightly toxic. Skin: May irritate skin. Prolonged or repeated skin contact may cause dermatitis. Eye: Causes moderate eye irritation.			
Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?			
Signs and Symptoms of Exposure			
Medical Conditions Generally Aggravated by Exposure			
Emergency and First Aid Procedures In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. If inhaled, remove to fresh air.			
If large amounts were swallowed, call a physician immediately. Get medical attention if irritation or breathing difficulty develops.			
Section VII Precautions for Safe Handling and Use			
Steps to Be Taken in Case Material is Released or Spilled Remove all sources of ignition. Ventilate area of leak or spill. Spills: Clean up spills in a manner that			
Does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for			
Recovery or disposal and place in a closed container.			
Waste Disposal Method Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Dispose of			
container and unused contents in accordance with federal, state and local requirements.			
Precautions to Be Taken in Handling and Storing Keep in tightly closed container, in a cool, dry, ventilated area. Isolate from incompatible substances. Avoid dust			
formation and control ignition sources. Employ provisions in accord w/ accepted engineering practices in processes capable of generating dust and static electricity.			
Other Precautions This material is expected to be slightly toxic to aquatic life. When released into soil, this material may biodegrade to a moderate extent, this			
material Is not expected to evaporate significantly. When released into water this material is expected to readily biodegrade, evaporate significantly or significantly bioaccumulate			
Section VIII Control Measures			
Respiratory Protection (<i>Specify Type</i>) NIOSH Approved. If exposure limit is exceeded, a full facepiece respirator w/dust/mist filter.			
Ventilation	Local Exhaust	X	Special
	Mechanical (General)		Other
Protective Gloves	Rubber gloves and lab coat, apron or coveralls	Eye Protection	Chemical Safety goggles or full face shield.
Other Protective Clothing or Equipment Maintain eyewash fountain and quick-drench facilities in work.			
Work/Hygienic Practices			

JARCHEM INDUSTRIES INC -- CALCIUM ACETATE -- 6810-00N068613

===== Product Identification =====

Product ID:CALCIUM ACETATE
MSDS Date:10/01/1989
FSC:6810
NIIN:00N068613
MSDS Number: CBJCM
=== Responsible Party ===
Company Name:JARCHEM INDUSTRIES INC
Address:414 WILSON AVE
City:NEWARK
State:NJ
ZIP:07105
Country:US
Info Phone Num:201-344-0600
Emergency Phone Num:201-344-0600
CAGE:JO270

=== Contractor Identification ===
Company Name:JARCHEM INDUSTRIES INC
Address:414 WILSON AVE
Box:City:NEWARK
State:NJ
ZIP:07105
Country:US
Phone:973-344-0600
CAGE:JO270

===== Composition/Information on Ingredients =====

Ingred Name:ACETIC ACID, CALCIUM SALT; (CALCIUM ACETATE)
CAS:62-54-4
RTECS #:AF7525000
Fraction by Wt: 99-100%
OSHA PEL:N/K
ACGIH TLV:N/K

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:INHALATION OF DUST MAY BOTHER
RESPIRATORY SYSTEM.
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:SEE HEALTH HAZARDS.
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:INGEST:CALL MD IMMEDIATELY . INHAL:REMOVE TO FRESH AIR.
SUPPORT BREATHING (GIVE O*2/ARTF RESP) . EYES:IMMEDIATELY FLUSH
W/POTABLE WATER FOR A MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM
MD . SKIN:REMOVE FROM DUSTY CONDITIONS & WASH AFFECTED AREA.

===== Fire Fighting Measures =====

Extinguishing Media:WATER.

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT . COOL CONTAINERS.

Unusual Fire/Explosion Hazard:DECOMPOSES TO ACETONE & CALCIUM CARBONATE.

===== Accidental Release Measures =====

Spill Release Procedures:SHOVEL INTO CLEAN CONTAINERS, WASH DOWN WATER.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:WEAR NIOSH/MSHA APPROVED RESPIRATOR IN DUSTY CONDITIONS.

Ventilation:LOCAL EXHAUST: IF DUSTY.

Protective Gloves:RUBBER OR PLASTIC GLOVES.

Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS .

Other Protective Equipment:EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET ANSI DESIGN CRITERIA .

Work Hygienic Practices:GOOD PERSONAL HYGIENE.

Supplemental Safety and Health

BP:320F,160C (DECOMPOSES). MP:320F,160C (DECOMPOSES).

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:SUPP DATA

Melt/Freeze Pt:M.P/F.P Text:SUPP DATA

Decomp Temp:Decomp Text:320F,160C

Spec Gravity:1.5 (H*20=1)

Solubility in Water:APPRECIABLE

Appearance and Odor:WHITE GRANULES OR POWDER.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF I/A/W ALL LOCAL, STATE & FEDERAL REGULATIONS.

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JOHNSON MATTHEY -- CALCIUM STEARATE, 39423 -- 6810-00N064176

===== Product Identification =====

Product ID:CALCIUM STEARATE, 39423
 MSDS Date:01/15/1995
 FSC:6810
 NIIN:00N064176
 MSDS Number: CBCMB
 === Responsible Party ===
 Company Name:JOHNSON MATTHEY
 Address:30 BOND ST
 City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Info Phone Num:608-521-6300
 Emergency Phone Num:800-424-9300 (CHEMTREC)
 CAGE:0JVJ1

=== Contractor Identification ===

Company Name:JOHNSON MATTHEY CATALOG CO INC ALFA AESAR
 Address:30 BOND ST
 Box:City:WARD HILL
 State:MA
 ZIP:01835-0747
 Country:US
 Phone:978-521-6300
 CAGE:0JVJ1

===== Composition/Information on Ingredients =====

Ingred Name:STEARIC ACID, CALCIUM SALT; (CALCIUM STEARATE)
 CAS:1592-23-0
 RTECS #:WI3000000
 Fraction by Wt: 100%
 OSHA PEL:N/K
 ACGIH TLV:10 MG/M3 (MFR)

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE:INGESTION:MAY BE HARMFUL,
 EFFECTS NOT KNOWN. SKIN/EYE CONTACT:MAY CAUSE IRRITATION.
 INHALATION:MAY CAUSE IRRITATION. CHRONIC:NONE KNOWN.
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE KNOWN.

===== First Aid Measures =====

First Aid:INGEST:ONE SHOULD OBTAIN MEDICAL ATTENTION. SKIN:REMOVE
 CONTAMINATED CLOTHING, FLOOD SKIN W/LARGE AMOUNTS OF WATER. IF
 IRRITATION PERSISTS SEEK MEDICAL ATTENTION. EYE:IMMEDIATELY FLUSH,
 INCLUDING UNDER EYELIDS, W/LARGE AMOUNTS OF WATER FOR AT LEAST 15
 MINUTES. CALL MD. INHAL:ONE SHOULD OBTAIN MEDICAL ATTENTION.

===== Fire Fighting Measures =====

Extinguishing Media:USE WATER, CARBON DIOXIDE, DRY CHEMICAL
EXTINGUISHING AGENTS, DRY SAND OR DRY GROUND DOLOMITE.

Fire Fighting Procedures:USE NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP .
NO SPECIAL FIREFIGHTING PROCS NEEDED. IF W/OUT RISK, REMOVE MATL
FROM FIRE AREA. COOL CNTNR W/WATER(SUPDAT)

Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures:WEARING FULL PROTECTIVE EQUIPMENT, COVER SPILL
W/DRY SAND OR VERMICULITE. MIX WELL & CAREFULLY TRANSFER TO A
CONTAINER.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP CONTAINER TIGHTLY CLOSED. STORE
IN A COOL, DRY, WELL-VENTILATED AERA.

Other Precautions:WARNING:MAY IRRITATE SKIN, EYES, LUNGS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED HIGH EFFICIENCY RESPIRATOR.

Ventilation:LABORATORY FUME HOOD.

Protective Gloves:RUBBER GLOVES.

Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS .

Other Protective Equipment:EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET
ANSI DESIGN CRITERIA . LAB COAT, & APRON, FLAME & CHEMICAL (SUPDAT)

Work Hygienic Practices:WASH THOROUGHLY AFTER USE.

Supplemental Safety and Health

FIRE FIGHT PROC:FROM MAXIMUM DISTANCE. OTHER PROT EQUIP:RESISTANT
COVERALLS & HYGIENIC FACILITIES FOR WASHING.

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:354F,179C

Solubility in Water:INSOLUBLE

Appearance and Odor:WHITE POWDER; ODOR NOT KNOWN.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

ACIDS, ALKALIES.

Stability Condition to Avoid:NO DATA.

Hazardous Decomposition Products:CO, CO*2, CAO.

===== Disposal Considerations =====

Waste Disposal Methods:CONSULT STATE, LOCAL OR FEDERAL, EPA REGULATIONS
FOR PROPER DISPOSAL.

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assume responsibility for the suitability of this information to their
particular situation.

EM SCIENCE DIV EM INDUSTRIES -- SODIUM STEARATE, SX0970 -- 6850-00N018318

===== Product Identification =====

Product ID:SODIUM STEARATE, SX0970
 MSDS Date:02/16/1988
 FSC:6850
 NIIN:00N018318
 MSDS Number: BLWQB
 === Responsible Party ===
 Company Name:EM SCIENCE DIV EM INDUSTRIES
 Address:480 DEMOCRAT RD
 Box:70
 City:GIBBSTOWN
 State:NJ
 ZIP:08027
 Country:US
 Info Phone Num:609-354-9200
 Emergency Phone Num:800-424-9300 (CHEMTREC)
 CAGE:EO657

=== Contractor Identification ===
 Company Name:E M SCIENCE DIV OF E M INDUSTRIES INC
 Address:480 DEMOCRAT ROAD
 Box:70
 City:GIBBSTOWN
 State:NJ
 ZIP:08027
 Country:US
 Phone:800-222-0342/609-423-6300
 CAGE:63612
 Company Name:EM SCIENCE DIV EM INDUSTRIES INC
 Address:111 WOODCREST RD
 City:CHERRY HILL
 State:NJ
 ZIP:08034-0395
 Phone:(609) 354-9200 OR (513) 631-0445
 CAGE:EO657

===== Composition/Information on Ingredients =====

Ingred Name:STEARIC ACID, SODIUM SALT
 CAS:822-16-2
 RTECS #:WI4725000
 ACGIH TLV:10 MG/M3

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:NONE SPECIFIED BY MANUFACTURER.
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:DUST MAY BE IRRITATING TO EYES OR RESPIRATORY
 PASSAGES.
 Medical Cond Aggravated by Exposure:RESPIRATORY CONDITIONS.

===== First Aid Measures =====

First Aid:GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE. SKIN:

WASH THOROUGHLY W/SOAP & WATER. EYES: IMMEDIATELY FLUSH THOROUGHLY W/WATER FOR A MINIMUM OF 15 MIN. INHAL: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED. INGEST: IF CONSCIOUS, INDUCE VOMITING.

=====
Fire Fighting Measures
=====

Flash Point:350F,177C
Extinguishing Media:CO2, DRY CHEMICAL, WATER SPRAY.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:SEVERE HAZARD OCCURS WITH HEAVY DUST CONCENTRATION IN PRESENCE OF IGNITION SOURCE.

=====
Accidental Release Measures
=====

Spill Release Procedures:TAKE UP & CONTAINERIZE FOR PROPER DISPOSAL.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:KEEP CONTAINER CLOSED. STORE IN A COOL, DRY AREA AWAY FROM IGNITION SOURCES & OXIDIZERS.
Other Precautions:DO NOT BREATHE DUST. DO NOT GET IN EYES. AVOID PROLONGED/REPEATED SKIN CONTACT. DO NOT TAKE INTERNALLY.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .
Ventilation:MATERIAL SHOULD BE HANDLED OR TRANSFERED IN AN APPROVED FUME HOOD OR W/ADEQUATE VENTILATION.
Protective Gloves:NEOPRENE GLOVES OR EQUIVALENT.
Eye Protection:CHEMICAL WORKERS GOGGLES .
Other Protective Equipment:EYE WASH & SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.
Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

=====
Physical/Chemical Properties
=====

HCC:N1
Melt/Freeze Pt:M.P/F.P Text:401F,205C
Spec Gravity:1.02
Solubility in Water:SLIGHT.
Appearance and Odor:WHITE POWDER; SLIGHT PARAFFINIC ODOR.

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS.
Stability Condition to Avoid:DUSTING; CONTACT WITH IGNITION SOURCES.
Hazardous Decomposition Products:COX, NA2O.

=====
Disposal Considerations
=====

Waste Disposal Methods:TO BE PERFORMED IN COMPLIANCE WITH ALL CURRENT LOCAL, STATE, AND FEDERAL REGULATIONS.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Acetoacetanilide, 99%

ACC# 75067

Section 1 - Chemical Product and Company Identification

MSDS Name: Acetoacetanilide, 99%**Catalog Numbers:** AC102360000, AC102360010, AC102360050, AC102362500, AC102365000**Synonyms:** AAA**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
102-01-2	Acetoacetanilide	99	202-996-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Caution! May cause eye and skin irritation. May cause respiratory tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: None.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.

Ingestion: Ingestion of large amounts may cause gastrointestinal irritation. The toxicological properties of this substance have not been fully investigated.

Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of

milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

Flash Point: 162 deg C (323.60 deg F)

Autoignition Temperature: 450 deg C (842.00 deg F)

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

Storage: Store in a cool, dry place. Keep container closed when not in use.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Acetoacetanilide	none listed	none listed	none listed

OSHA Vacated PELs: Acetoacetanilide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: @ 760.00mm Hg

Freezing/Melting Point: 85 - 86 deg C

Decomposition Temperature: Not available.

Solubility: 5 g/l (20 c)

Specific Gravity/Density: 1.1 @ 85°C

Molecular Formula: CH₃COCH₂CONHC₆H₅

Molecular Weight: 177.20

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, nitrogen.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 102-01-2: AK4200000

LD50/LC50:

CAS# 102-01-2:

Dermal, guinea pig: LD50 = >1 gm/kg;

Oral, mouse: LD50 = 3400 mg/kg;

Oral, rabbit: LD50 = 3925 mg/kg;

Oral, rat: LD50 = 2450 mg/kg;

Carcinogenicity:

CAS# 102-01-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 102-01-2 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 102-01-2 can be found on the following state right to know lists: Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 102-01-2: 1

Canada - DSL/NDSL

CAS# 102-01-2 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #3 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

ALDRICH CHEMICAL CO -- ANTHRANILIC ACID, 98+%, A8985-5 -- 6810-00N037945

===== Product Identification =====

Product ID: ANTHRANILIC ACID, 98+%, A8985-5

MSDS Date: 03/17/1992

FSC: 6810

NIIN: 00N037945

MSDS Number: BQVJV

=== Responsible Party ===

Company Name: ALDRICH CHEMICAL CO

Box: 355

City: MILWAUKEE

State: WI

ZIP: 53201

Country: US

Info Phone Num: 414-273-3850

Emergency Phone Num: 414-273-3850

CAGE: 60928

=== Contractor Identification ===

Company Name: ALDRICH CHEMICAL CO INC

Address: 1001 WEST ST PAUL AVE

Box: 355

City: MILWAUKEE

State: WI

ZIP: 53233

Country: US

Phone: 414-273-3850

CAGE: 60928

A 8 9855

===== Composition/Information on Ingredients =====

Ingred Name: ANTHRANILIC ACID

CAS: 118-92-3

RTECS #: CB2450000

Fraction by Wt: >98%

===== Hazards Identification =====

LD50 LC50 Mixture: LD50: (ORAL, MOUSE) 1400 MG/KG

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES

Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO

Health Hazards Acute and Chronic: ACUTE: HARMFUL IF SWALLOWED. MAY BE HARMFUL IF INHALED. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. CAUSES EYE AND SKIN IRRITATION. MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER RESP TRACT. TO THE BEST OF MFR'S KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN (EFTS OF OVEREXP)

Explanation of Carcinogenicity: NOT RELEVANT

Effects of Overexposure: HLTH HAZ: THOROUGHLY INVESTIGATED.

Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: EYE: IMMEDIATELY FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MIN. SKIN: IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS AMOUNTS OF WATER. INHAL: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTF RES P. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGEST: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A

PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE.

=====
===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT TO PREVENT CONTACT WITH SKIN AND EYES.

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

=====
===== Accidental Release Measures =====

Spill Release Procedures:WEAR NIOSH/MSHA APPRVD RESP, CHEM SAFETY GOGGLES, RUBBER BOOTS & HVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG & HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA AND WASH SPILL SITE AFTER MAT ERIAL PICKUP IS COMPLETE.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
===== Handling and Storage =====

Handling and Storage Precautions:DO NOT BREATHE DUST. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. IRRITANT. KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE.

Other Precautions:NONE SPECIFIED BY MANUFACTURER.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST REQUIRED.

Protective Gloves:COMPATIBLE CHEMICAL-RESISTANT GLOVES.

Eye Protection:CHEMICAL WORKERS GOGGLES

Other Protective Equipment:SAFETY SHOWER AND EYE BATH.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

NONE SPECIFIED BY MANUFACTURER.

=====
===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:>291F,>144C

Vapor Density:4.7

Appearance and Odor:OFF-WHITE POWDER

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES.

=====
===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. DISPOSAL MUST BE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGUL ATIONS .

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Material Safety Data Sheet

Azelaic Acid, 98% (Titr.)

ACC# 74118

Section 1 - Chemical Product and Company Identification

MSDS Name: Azelaic Acid, 98% (Titr.)**Catalog Numbers:** AC401520000, AC401520250, AC401521000, AC401525000, ACE1128834**Synonyms:** Nonanedioic Acid; Heptanedicarboxylic Acid; Lepargylic Acid.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
123-99-9	Azelaic Acid	98	204-669-1

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white flakes.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: No data found.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT

induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: 210 deg C (410.00 deg F)

Autoignition Temperature: Not available.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. **Minimize dust generation and accumulation.** Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Azelaic Acid	none listed	none listed	none listed

OSHA Vacated PELs: Azelaic Acid: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Flakes

Appearance: white

Odor: none reported

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 237 deg C @ 20.00hPa

Freezing/Melting Point: 107 deg C

Decomposition Temperature: Not available.

Solubility: 2.4g/l(20°C)

Specific Gravity/Density: Not available.

Molecular Formula: C9H16O4

Molecular Weight: 188.22

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation, excess heat, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 123-99-9: CM1980000

LD50/LC50:

CAS# 123-99-9:

Draize test, rabbit, eye: 3 mg Mild;

Draize test, rabbit, skin: 500 mg/24H Mild;

Oral, rat: LD50 = >5 gm/kg;

Carcinogenicity:

CAS# 123-99-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 123-99-9 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 123-99-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 123-99-9: 1

Canada - DSL/NDSL

CAS# 123-99-9 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
--

MSDS Creation Date: 9/02/1997

Revision #5 Date: 10/03/2005

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EMS CATALOG NO: 11100
EMS PRODUCT: Azo-Bis-Iso-Butyronitrile
DATE: 11/11/94
PAGE NUMBER: One of 7

MATERIAL SAFETY DATA SHEET

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Electron Microscopy Sciences assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.

ELECTRON MICROSCOPY SCIENCES
321 MORRIS ROAD
P.O. BOX 251
FORT WASHINGTON, PA 19034 24 HOUR EMERGENCY PHONE NUMBER
(215) 646-1566 CHEMTREC: (800) 424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT ELECTRON MICROSCOPY SCIENCES OFFICE ABOVE.

PRODUCT IDENTIFICATION

PRODUCT NAME: Azo-Bis-Iso-Butyronitrile
TRADE NAMES AND Azobisisobutyronitrile
SYNONYMS: Azoisobutyronitrile; VAZO
CAS NAME: Propanenitrile, 2-methyl, 2,2'-Azobis
CAS NUMBER: 78-67-1
FORMULA: $(\text{CH}_3)_2\text{C}(\text{CN})\text{N}=\text{NC}(\text{CH}_3)_2(\text{CN})$
TSCA INVENTORY STATUS: Reported/Included.

COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT: CAS: %
Propanenitrile, 2-Methyl,
2,2'-Azobis 78-67-1 100

Tetramethylsuccinonitrile 3333-52-6
(A Decomposition Product)
* * * CATALOG NO: 11100 * * * (Page 2 of 7)

HEALTH HAZARD INFORMATION

Harmful if swallowed or inhaled- may cause liver and kidney damage. Causes eye irritation.

ANIMAL DATA:

INHALATION 4-HOUR ALC: 950 mg/m3 in rats
ORAL ALD: 450 mg/kg in rats

The compound is an eye irritant, but is not a skin irritant or skin sensitizer in animals. Toxic effects described in animals from repeated inhalation exposures include liver and kidney damage, and nonspecific effects such as weight loss and respiratory tract irritation. By ingestion, single exposures produced no gross pathology at sublethal doses; lethal doses produced lung, liver, kidney, and stomach damage. Repeated oral administration resulted in weight loss, labored breathing with lung noises, and some liver effects which were reversible after the exposures had been stopped. The compound does not produce genetic damage in bacterial cell cultures.

HUMAN HEALTH EFFECTS:

Human health effects of overexposure by eye contact may include eye irritation with discomfort, tearing, or blurring of vision. By inhalation or ingestion, the effects include nonspecific discomfort such as nausea, headache, or weakness; abnormal liver or kidney function as determined by laboratory tests; liver enlargement; and central nervous system effects with tremors, convulsions, and irritability. Fatality from gross overexposure may occur.

Individuals with preexisting diseases of the lungs, liver, kidneys, or central nervous system may have increased susceptibility to the toxicity of excessive exposures.

WARNING!!!!:

In the absence of a polymerizable vinyl monomer, Azo-Bis-Iso-Butyronitrile decomposes when heated to give products which are harmful or fatal if inhaled. One such product is tetramethylsuccinonitrile (TMSN). Skin or inhalation contact with TMSN can cause headache, sensation of pressure within the head, dizziness, nausea, vomiting, peculiar taste, respiratory distress, fatigue, convulsions and unconsciousness. Overexposure to TMSN can be fatal.

* * * CATALOG NO: 11100 * * * (Page 3 of 7)

CARCINOGENICITY:

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

FIRST AID MEASURES

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Call a physician.

SKIN CONTACT: In case of contact, immediately wash skin with soap and water. Wash contaminated clothing before reuse.

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION: If swallowed, immediately give 2 glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.

FIRE AND EXPLOSION DATA

FLASH POINT: Not applicable
FLAMMABLE LIMITS LEL: 0.02 g/L
IN AIR, % by volume: UEL: Not determined
AUTOIGNITION: 295oC (563oF)

AUTODECOMPOSITION

TEMPERATURE: See "Decomposition"

FIRE AND EXPLOSION HAZARDS: Flammable solid.

Material may erupt if exposed to heat (above 50oC or 122oF) or fire. Dust forms explosive mixtures in air and an eruption of drums from exposure to heat may form explosive dust mixtures. Static electricity is a likely ignition source for dust; therefore handling equipment should be metal and should be grounded. Also, see "Decomposition", and "Health Hazard sections. Follow appropriate National Fire Protection Association (NFPA codes for handling and storage.

EXTINGUISHING MEDIA:

SMALL FIRES: Dry chemical, carbon dioxide (CO2).
LARGE FIRES: Water spray or deluge.

* * * CATALOG NO: 11100 * * * (Page 4 of 7)

SPECIAL FIRE FIGHTING INSTRUCTIONS:

Evacuate area immediately. Wear respiratory protection, stay upwind and avoid smoke and flame. Fight fires with sprinkler or deluge system or remotely-operated hydrant with monitor nozzles. Cool containers and wet exposed material with water spray. Run-off water from fire control should be contained to avoid pollution. Do not approach a large fire because of possible rapid decomposition and rupture of containers.

ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL):

Review FIRE AND EXPLOSION HAZARDS AND SAFETY PRECAUTIONS (PERSONNEL) before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE

EQUIPMENT during clean up.

SPILL CLEAN UP: Cleaned-up material is a RCRA Hazardous Waste.

ACCIDENTAL RELEASE MEASURES:

Transfer to unsealed drums without creating dust, and refrigerate. Contaminated floor may be flushed with water to chemical sewer. Do not vacuum. Use spark-proof equipment. Comply with Federal, State, and Local regulations on reporting releases.

The Reportable Quantity for a generic Reactive Substance is 100 lbs.

HANDLING, STORAGE & DISPOSAL INFORMATION

HANDLING (PERSONNEL):

Avoid breathing dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

STORAGE:

Store in a refrigerator or out of sun and in cool, dry place below about 75oC (24oC); higher temperatures cause decomposition.

Above about 122oF (50oC), decomposition may become violent, yielding toxic products. Do not store with strong oxidizing agents. Keep away from ignition sources. Do not smoke.

* * * CATALOG NO: 11100 * * * (Page 5 of 7)

Store in original vented containers; do not transfer to tightly sealed containers. Automatic water sprinkler or deluge system recommended.

WASTE DISPOSAL:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

EXPOSURE CONTROLS/PROTECTION INFORMATION

ENGINEERING CONTROLS:

Good general ventilation should be provided to keep dust concentrations below the recommended exposure limit and to prevent the formation of explosive dust mixtures in air.

PERSONAL PROTECTIVE EQUIPMENT:

Have available and wear as appropriate: Impervious gloves, pants, jacket, hood, and boots; face shield; or totally encapsulating air supplied chemical protective suit if there is potential for exposure to tetramethylsuccinonitrile (TMSN) vapor or solids, or a liquid contaminated with TMSN. Clothing contaminated with TMSN should be removed immediately. Skin that becomes contaminated should be

promptly washed with soap and water.

NOTE: To avoid static electricity when dissolving in flammable solvents, Azo-Bis-Iso-Butyronitrile should first be transferred to an electrically grounded, OPEN metal container or hopper.

EXPOSURE GUIDELINES

EXPOSURE LIMITS: AZO-BIS-ISO-BUTYRONITRILE FREE RADICAL SOURCE:

AEL* (DU PONT): 1 mg/m³- 8 hr TWA

0.7mg/m³, 8 hr TWA

TLV (ACIH): None established

PEL (OSHA): None established

* AEL is Du Pont's acceptable exposure limit.

EXPOSURE LIMITS-DECOMPOSITION PRODUCT-TETRAMETHYLSUCCIONONITRILE:

TLV (ACGIH): 0.5 ppm, 3 mg/m³ - Skin

PEL (OSHA): 0.5 ppm, 3 mg/m³ - Skin

* * * CATALOG NO: 11100 * * * (Page 6 of 7)

PHYSICAL DATA

VAPOR PRESSURE: Negligible at room temperature.

EVAPORATION RATE: 0 (Butyl Acetate = 1.0)

WATER SOLUBILITY: Less than 1 wt %

pH: Neutral

ODOR: Odorless

FORM: Solid Noodle

COLOR: White

SPECIFIC GRAVITY: ~1.1

BULK DENSITY: ~25 lbs/cu ft (loose)

MELTING POINT: ~100°C / 212°F

Caution: Do not attempt to verify;
decomposition can be violent.

STABILITY & REACTIVITY

STABILITY: Unstable with heat and, if dusty conditions exist, with static electric charges.

INCOMPATIBILITY: Incompatible with powerful inorganic oxidizers, such as nitric acid.

POLYMERIZATION: Polymerization will not occur.

DECOMPOSITION:

Azo-Bis-Iso-Butyronitrile decomposes rapidly on heating to 50°C (122°F) and higher, liberating nitrogen and forming two free radicals. Nitrogen, in a confined space, can form dangerous pressures. In the absence of other materials, the free radicals combine to form tetramethylsuccionitrile (TMSN).

TMSN is highly toxic by inhalation, and although it is a high melting solid (168oC) it can readily vaporize, even at room temperature. TMSN in both solid and vapor form is capable of penetrating the skin and mucous membrane. Exposure to TMSN can cause headache, sensation of pressure within the head, dizziness, nausea, vomiting, peculiar taste, respiratory distress, fatigue, convulsions, and unconsciousness. Overexposure to TMSN can be fatal.

NOTE: The 50oC is the self-accelerating decomposition temperature (SADT) for Azo-Bis-Iso-Butyronitrile.

* * * CATALOG NO: 11100 * * * (Page 7 of 7)

ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION - AQUATIC TOXICITY:

A decomposition product of "Vazo" 64 (Tetremethylbutanedinitrile) was slightly toxic to Daphnia Magna Neonates. The 48 hour EC50 based on nominal concentrations was 358 mg/l. The 96 hour LC50 was 16.4 mg/l in fathad minnows.

TRANSPORTATION INFORMATION

DOT/IMO: PROPER SHIPPING NAME: Azodiisobutyronitrile
HAZARD CLASS: Flammable Solid, 4.1
UN NO.: UN 2952
DOT/IMO LABEL: Flammable Solid
PACKAGING GROUP: II
SHIPPING CONTAINERS: Fiber drums, polyethylene sample bags

REGULATORY INFORMATION

US FEDERAL REGULATIONS:

TSCA INVENTORY STATUS - REPORTED/INCLUDED.:
TITLE III HAZARD CLASSIFICATIONS SECTION 311, 312:

ACUTE: Yes FIRE: Yes
CHRONIC: Yes REACTIVITLY: Yes
PRESSURE: Yes

LISTS: EXTREMELY HAZARDOUS SUBSTANCE: No
CERCLA HAZARDOUS SUBSTANCE: Yes*
TOXIC CHEMICAL: No
* Meets the generic definition of a Reactive Substance.

CANADIAN WHMIS CLASSIFICATION: D-1A; D-1B; B-4

NFPA-HMIS RATINGS:

HEALTH: 2
FLAMMABILITY: 2
REACTIVITY: 2

Personal protection rating to be supplied by user depending on use conditions.

PFIZER CHEMICAL DIVISION -- BENZOIC ACID -- 6810-00N018098

===== Product Identification =====

Product ID: BENZOIC ACID
 MSDS Date: 06/17/1991
 FSC: 6810
 NIIN: 00N018098
 MSDS Number: BKZMP
 === Responsible Party ===
 Company Name: PFIZER CHEMICAL DIVISION
 Address: 235 EAST 42ND ST
 City: NEW YORK
 State: NY
 ZIP: 10017
 Info Phone Num: 718-780-8456
 Emergency Phone Num: 718-780-8456
 CAGE: DO806
 === Contractor Identification ===
 Company Name: PFIZER CHEMICAL DIVISION
 Address: 235 EAST 42ND ST
 Box: City: NEW YORK
 State: NY
 ZIP: 10017
 Country: US
 Phone: 718-780-8456
 CAGE: DO806
 Company Name: PFIZER INC, MINERALS & PIGMENT DIVISION
 Address: 235 EAST 42ND ST
 Box: City: NEW YORK
 State: NY
 ZIP: 10017
 Country: US
 Phone: 212-573-2816
 CAGE: 86491

===== Composition/Information on Ingredients =====

Ingred Name: BENZOIC ACID (SARA III)
 CAS: 65-85-0
 RTECS #: DG0875000
 Fraction by Wt: 100%
 EPA Rpt Qty: 5000 LBS
 DOT Rpt Qty: 5000 LBS

===== Hazards Identification =====

LD50 LC50 Mixture: LD50: ORAL(RAT) 2,565MG/KG
 Routes of Entry: Inhalation: YES Skin: NO Ingestion: YES
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: CHRONIC: EFFECTS OF CHRONIC AND
 SUB-ACUTE EXPOSURE ARE UNKNOWN. BENZOIC ACID OCCURS NATURALLY IN
 FOODS. THE FDA HAS AFFIRMED BENZOIC ACID AS GENERALLY RECOGNIZED AS
 SAFE (GRAS) WHEN USED AT LEVELS NOT HIGHER THAN 0.1%. INGEST: NOT
 CONSIDERED A NORMAL ROUTE OF EXPOSURE. EYE: CONSIDERED SEVERE IRRIT
 (SEE EFTS OF OVEREXP)
 Explanation of Carcinogenicity: NOT RELEVANT.
 Effects of Overexposure: HLTH HAZ: IN RABBITS, NO HUMAN DATA AVAILABLE.
 DIRECT CONTACT MAY CAUSE IRRIT. SKIN: CONSIDERED A MODERATE SKIN

IRRITANT. INHALATION: HIGHLY TOXIC BY INHALATION OF VAPORS TO MUCOUS MEMBRANE. ALSO GASTRIC IRRITATION.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

=====
 First Aid Measures
 =====

First Aid:INGEST: NOT APPLICABLE IF CONSUMED IN SMALL CHANCE AMOUNTS.
 IF LARGER INGESTION IS INVOLVED, PURGE THE STOMACH. EYE: FLUSH EYE CONTACT IMMEDIATELY WITH PLENTY OF WATER FOR A MINIMUM OF 15 MINUTES. GET MEDICAL ATTENTION. SKIN: FLUSH SKIN WITH WATER. LAUNDRER CLOTHING BEFORE REUSE. INHAL: REMOVE PATIENT TO FRESH AIR-SEEK MEDICAL ATTENTION.

=====
 Fire Fighting Measures
 =====

Flash Point Method:CC
 Flash Point:250F,121C
 Lower Limits:3%
 Upper Limits:35%
 Extinguishing Media:WATER, CO2, DRY CHEMICAL, SPRAY OR MIST.
 Fire Fighting Procedures:NONE NORMALLY. USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .
 Unusual Fire/Explosion Hazard:NONE-WEAK B OF M RELATIVE EXPLOSION
 HAZARD RATING:

=====
 Accidental Release Measures
 =====

Spill Release Procedures:FLAKE/POWDER FORMS ARE COLLECTED BY VACUUM/BROOM & SHOVEL. LIQ FORM ARE ALLOWED TO COOL THEN COLLECTED BY BROOM & SHOVEL. MAJOR LIQ SPILLS MUST BE DIKED TO CONTAIN MATL. NIOSH/MSHA APPRVD SELF CONTAINED BREATHING EQUIP SHOULD BE USED IN HANDLING LIQ SPILLS
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
 Handling and Storage
 =====

Handling and Storage Precautions:NONE REQD FOR POWDER/FLAKE, IN HANDLING MOLTEN MATERIAL (122C) USE NIOSH/MSHA APPRVD SCBA, GOGGLES/FACE SHIELD & ACID PROOF SUIT AS PROT FROM FUMES.
 Other Precautions:STORE IN TIGHTLY CLOSED CONTAINERS WITH ADEQUATE VAPOR BARRIERS. KEEP AWAY FROM STRONG OXIDIZING AGENT.

=====
 Exposure Controls/Personal Protection
 =====

Respiratory Protection:AS FLAKE-NONE; AS POWDER-NIOSH/MSHA APPROVED NUISANCE DUST MASK.
 Ventilation:LOCAL EXHAUST TO CONTAIN DUSTING.
 Protective Gloves:STANDARD WORK GLOVES.
 Eye Protection:CHEMICAL WORKERS GOGGLES .
 Other Protective Equipment:SCBA, GOGGLES/FACESHIELD, & ACID PROOF SUIT, WHEN HANDLING MOLTEN MATERIAL (122 C).
 Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
 Supplemental Safety and Health
 % VOLAT: SUBLIMES ABOVE 205 F.

=====
 Physical/Chemical Properties
 =====

HCC:N1
 Vapor Pres:6.5
 Vapor Density:4.21

Spec Gravity:-1.316

pH:2.8

Evaporation Rate & Reference:NOT APPLICABLE.

Solubility in Water:SLIGHT.

Appearance and Odor:WHITE FLAKES/POWDER,CHARACT ODOR OF BENZALDEHYDE/
BENZOIN.MOLTEN MATL ALSO AVAI

Percent Volatiles by Volume:SUPDAT

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

USUAL INCOMPATIBILITIES OF ORGANIC ACIDS/STRONG OXIDIZERS, AGENTS.

Stability Condition to Avoid:NONE KNOWN.

Hazardous Decomposition Products:FROM SEVERE HEAT OF FIRE: BENZINE, CO2
AND CARBON MONOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods:COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL
REGULATIONS. CONSIDER LANDFILL OR INCINERATION.

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assume responsibility for the suitability of this information to their
particular situation.

OCTAGON PROCESS INC. -- BENZOTRIAZOLE -- 6810-01-095-2465

===== Product Identification =====

Product ID: BENZOTRIAZOLE
MSDS Date: 01/08/1992
FSC: 6810
NIIN: 01-095-2465
MSDS Number: BLWGW
=== Responsible Party ===
Company Name: OCTAGON PROCESS INC.
Address: 596 RIVER ROAD
City: EDGEWATER
State: NJ
ZIP: 07020-1105
Country: US
Info Phone Num: 201-945-9400
Emergency Phone Num: 201-945-9400/800-424-9300 (CHEMTREC)
Preparer's Name: J. J. BURGARD (201-313-1187)
CAGE: 82925
=== Contractor Identification ===
Company Name: OCTAGON PROCESS INC.
Address: 596 RIVER ROAD
Box: City: EDGEWATER
State: NJ
ZIP: 07020
Country: US
Phone: 201-945-9400
CAGE: 82925

===== Composition/Information on Ingredients =====

Ingred Name: 1,2,3-BENZOTRIAZOLE
CAS: 95-14-7
RTECS #: DM1225000
Fraction by Wt: 100%
Other REC Limits: NONE SPECIFIED
OSHA PEL: 15 MG/M3 TDUST
ACGIH TLV: 10 MG/M3 TDUST; 9192

===== Hazards Identification =====

Routes of Entry: Inhalation: YES Skin: NO Ingestion: YES
Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
Health Hazards Acute and Chronic: MAIN HAZARDS ARE EYE IRRITATION AND
INHALATION OF DUST WHICH AFFECTS THE UPPER RESPIRATORY TRACT.
PRODUCT IS ALSO TOXIC BY INGESTION.
Effects of Overexposure: EYES: REDNESS, STINGING, BURNING SENSATION AND
IRRITATION. SKIN: REDNESS AND IRRITATION. INHALATION/INGESTION:
BURNING SENSATION AND IRRITATION TO THE NOSE, MOUTH, THROAT, UPPER
RESPIRATORY TRACT AND G.I. TRACT.
Medical Cond Aggravated by Exposure: PRODUCT DUST WILL AGGRAVATE
PRE-EXISTING RESPIRATORY CONDITIONS.

===== First Aid Measures =====

First Aid: EYES: FLOOD WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION.
SKIN: WASH EXPOSED AREAS WITH WATER AND MILD SOAP. IF IRRITATION
PERSISTS, GET MEDICAL ATTENTION. INHALATION: MOVE VICTIM TO FRESH

AIR. IF NOT BREATHING GIVE CPR. IF BREATHING DIFFICULT GIVE OXYGEN. GET MEDICAL ATTENTION. INGESTION: ADMINISTER LARGE QUANTITIES OF WATER AND INDUCE VOMITING IF VICTIM IS CONSCIOUS. GET MEDICAL ATTENTION.

=====
 Fire Fighting Measures
 =====

Flash Point Method:COC

Flash Point:340F,171C

Extinguishing Media:DRY CHEMICAL, FOAM OF CARBON DIOXIDE.

Fire Fighting Procedures:WATER MAY BE INEFFECTIVE. IF USED, FOG NOZZLES ARE PREFERABLE. WATER MAY BE USED TO COOL CLOSED CONTAINERS EXPOSED TO EXTREME HEAT TO PREVENT POSSIBLE EXPLOSION.

Unusual Fire/Explosion Hazard: ~~AIRBORNE DUST IS RATED AS A SEVERE EXPLOSION HAZARD AT A MINIMUM CONCENTRATION OF 0.03 OUNCE PER CUBIC FOOT (30 GRAMS PER CUBIC METER).~~

=====
 Accidental Release Measures
 =====

Spill Release Procedures:DO NOT ALLOW SPILL TO ENTER DRAINS, SEWERS OR WATERWAYS. VACUUM OR SWEEP UP AND REUSE IF POSSIBLE. IF NOT RE-USABLE, PLACE IN PROPER CONTAINERS FOR DISPOSAL. FLUSH AREA WITH LARGE AMOUNTS OF WATER. COMPLY WITH ALL SPILL NOTIFICATION REGULATIONS.

Neutralizing Agent:NONE GIVEN BY MANUFACTURER.

=====
 Handling and Storage
 =====

Handling and Storage Precautions:STORE IN A COOL DRY WELL VENTILATED AREA AWAY FROM OXIDIZERS. KEEP CONTAINERS CLOSED. ISOLATE FROM OPEN ~~IGNITION SOURCES~~. ENFORCE NO SMOKING RULES.

Other Precautions:AVOID BREATHING DUST. AVOID EYE AND SKIN CONTACT. CLEAN CONTAMINATED EQUIPMENT THOROUGHLY BEFORE STARTING REPAIR WORK. USE EXPLOSION-PROOF EQUIPMENT.

=====
 Exposure Controls/Personal Protection
 =====

Respiratory Protection:NONE NORMALLY REQUIRED. HOWEVER, IF WORKING IN CONFINED AREAS, IF HEAVY DUST IS EXPECTED OR IF RECOMMENDED EXPOSURE LIMITS ARE EXCEEDED, USE NIOSH-APPROVED RESPIRATORY PROTECTION FOR NUISANCE DUST.

Ventilation:EXPLOSION-PROOF MECHANICAL (GENERAL) AND LOCAL EXHAUST RECOMMENDED.

Protective Gloves:RUBBER OR VINYL.

Eye Protection:SAFETY GLASSES OR GOGGLES.

Other Protective Equipment:EYEWASH STATION AND EMERGENCY SHOWER. WEAR LONG-SLEEVE SHIRT AND PANTS WHEN HANDLING CHEMICALS.

Work Hygienic Practices:WASH HANDS AND FACE AFTER HANDLING THIS PRODUCT. SHOWER AFTER WORKING IN DUSTY CONDITIONS. LAUNDRY CONTAMINATED CLOTHING.

Supplemental Safety and Health

USE THIS PRODUCT ONLY WITH ADEQUATE VENTILATION. AVOID CREATING AIRBORNE DUST CONCENTRATIONS WHICH COULD CONSTITUTE A POTENTIAL DUST EXPLOSION HAZARD. ISOLATE ANY OPEN IGNITION SOURCES. USE EXPLOSION-PROOF EQUIPMENT.

=====
 Physical/Chemical Properties
 =====

HCC:N1

Boiling Pt:B.P. Text:664F,351C

Vapor Pres:0.04
Spec Gravity:1.36
Solubility in Water:2.0%
Appearance and Odor:OFF WHITE POWDER, SLIGHT CHARACTERISTIC ODOR.
Percent Volatiles by Volume:NONE

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS.
Stability Condition to Avoid:HEAT, SPARKS, OPEN FLAMES AND IGNITION
SOURCES.
Hazardous Decomposition Products:CARBON MONOXIDE, CARBON DIOXIDE,
NITROGEN OXIDES AND HCN IN REDUCING ATMOSPHERE.

===== Disposal Considerations =====

Waste Disposal Methods:CONTACT YOUR LOCAL ENVIRONMENTAL OFFICER. DIPOSE
OF WASTE IN COMPLIANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

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assume responsibility for the suitability of this information to their
particular situation.

GENERAL ELECTRIC COMPANY -- BISPHENOL-A (BPA) -- 9330-00N083702

===== Product Identification =====

Product ID:BISPHENOL-A (BPA)
 MSDS Date:12/06/1996
 FSC:9330
 NIIN:00N083702
 MSDS Number: CGRWY
 === Responsible Party ===
 Company Name:GENERAL ELECTRIC COMPANY
 Address:ONE PLASTICS AVENUE
 City:PITTSFIELD
 State:MA
 ZIP:01201
 Country:US
 Info Phone Num:800-845-0600
 Emergency Phone Num:800-447-4545;800-424-9300 (CHEMTREC)
 CAGE:72799
 === Contractor Identification ===
 Company Name:GENERAL ELECTRIC COMPANY
 Address:1 PLASTICS AVE
 Box:City:PITTSFIELD
 State:MA
 ZIP:01201-3630
 Country:US
 Phone:800-845-0600/304-863-7231
 CAGE:72799

===== Composition/Information on Ingredients =====

Ingrid Name:PHENOL, 4,4'-ISOPROPYLIDENEDI-; (BISPHENOL A (BPA)) (SARA
 313)
 CAS:80-05-7
 RTECS #:SL6300000
 Fraction by Wt: 100%
 Other REC Limits:3.5 MG/M3 (MFR)
 OSHA PEL:N/K
 ACGIH TLV:N/K

Ingrid Name:SUPDAT: SO. DO NOT GIVE ANYTHING BY MOUTH TO PERS WHO IS
 UNCON/HAVING CONVULSIONS. INHAL: MOVE TO FRESH AIR & (ING 3)
 RTECS #:9999999ZZ

Ingrid Name:ING 2: SEEK MEDICAL ATTENTION. IF NOT BREATHING, START CPR
 AND IMMEDIATELY SEEK MEDICAL ATTENTION.
 RTECS #:9999999ZZ

Ingrid Name:SPILL PROC: TRANSFER SPILLED SUBSTANCE & ANY CONTAM MATLS
 TO CLSD, IMPERVIOUS CNTNRS FOR DISP. FOR LG SPILLS, (ING 5)
 RTECS #:9999999ZZ

Ingrid Name:ING 4: DIKE FAR AHEAD OF SPILL FOR LATER DISP. CLEANUP PERS
 SHOULD WEAR RESP EQUIP & PROT CLTHG TO PVNT SKIN/EYE (ING 6)
 RTECS #:9999999ZZ

Ingrid Name:ING 5: CONT & INHAL OF DUST & VAPS. AVOID CREATING DUST
 CLOUDS.
 RTECS #:9999999ZZ

Ingred Name:RESP PROT: EFFICIENCY PARTICULATE FILTERS, OR POWERED
AIR-PURIFYING RESP EQUIPPED W/TIGHT-FACEPIECE & HIGH (ING 8)
RTECS #:9999999ZZ

Ingred Name:ING 7: EFFICIENCY PARTICULATE FILTERS.
RTECS #:9999999ZZ

Ingred Name:VENT: BE FOUND IN PUBLICATIONS SUCH AS: INDUS VENT; AVAIL
FROM AMERICAN CONFERENCE OF GOVT INDUS HYGIENISTS, (ING 10)
RTECS #:9999999ZZ

Ingred Name:ING 9: COMMITTEE ON INDUS VENT, PO BOX 16153, LANSING, MI
48901.
RTECS #:9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture:LD50 (ORAL RAT): 4040 MG/KG.

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:EMER OVERVIEW: WHITE SOLID W/MILD
ODOR. CAN BURN IN FIRE CREATING DENSE, TOXIC SMOKE. IRRITATING TO
EYES, SKIN & RESP TRACT. MAY FORM FLAM/EXPLO MIXT UNDER DUST CLOUD
CONDENS, ACUTE: EYE: MOD IRRITATING. SKIN: MILD IRRITANT. INGEST:
SLIGHTLY TOXIC. MAY BE HARMFUL IF SWALLOWED. INHAL: HIGH CONCS OF
DUST (EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT

Effects of Overexposure:HLTH HAZS: MAY CAUSE IRRIT TO RESP TRACT.
CHRONIC: OVEREXP MAY CAUSE CNS DEPRESS & LUNG, KIDNEY & LIVER DMG.
TOXICOLOGICAL INFO: AT CONC OF 25%, BPA WAS NOT SENSITIZER IN
GUINEA PIG, ALTHOUGH FEW ANIM ALS WERE SENSIT AT 50%. BPA HAS BEEN
RPTD TO BE SIGNIFICANT PHOTOSENSIT IN MICE & HUMANS. BPA HAS BEEN
RPTD TO (SUPDAT)

Medical Cond Aggravated by Exposure:CERTAIN SKIN SENSITIVE INDIVIDUALS
AND INDIVIDUALS WITH RESPIRATORY IMPAIRMENTS MAY BE AFFECTED BY
EXPOSURE TO THIS PRODUCT.

===== First Aid Measures =====

First Aid:EYES: REMOVE CONT LENSES @ ONCE. IMMED FLUSH WELL W/COPIOUS
QTIES OF WATER/NORM SALINE FOR AT LST 20-30 MINS. IF IRRIT
PERSISTS, SEEK MED ATTN. SKIN: IMMED FLUSH W/LG AMTS OF WATER FOR
AT LST 15 MINS. DON'T WAIT TO REMOVE CONTAM CLTHG; DO IT UNDER
WATER STREAM. USE SOAP TO HELP ASSURE REMOVAL OF CHEM. IMMED SEEK
MED AID. INGEST: IMMED CONT POISON CNTRL CTR, HOSP/PHYS. IF UNCON,
INSURE (SUPDAT)

===== Fire Fighting Measures =====

Flash Point:405F,207C

Extinguishing Media:DRY CHEMICAL, FOAM, WATER SPRAY, CARBON DIOXIDE.

Fire Fighting Procedures:USE NIOSH APPRVD SCBA & FULL PROT EQUIP . USE
EXTING WATER STREAM CAREFULLY TO AVOID CREATING DUST CLOUDS. SENSIT
TO STATIC DISCHARGE UNDER DUST (SUPDAT)

Unusual Fire/Explosion Hazard:POWDER REQS CONTINUOUS FLAME SOURCE TO
IGNITE. DUST CLOUDS LIKELY TO BE IGNITED BY SPK/FLAME SOURCE. HAZ
COMBUST PRODS MAY INCL INTENSE HEAT, DENSE (SUPDAT)

===== Accidental Release Measures =====

Spill Release Procedures:GENL: NOTIFY SFTY PERS. REMOVE ALL HEAT & IGNIT SOURCES. PROVIDE MAX VENT. EVAC ALL PERS FROM AREA EXCEPT THOSE INVOLVED IN CLEANUP. REMOVE LEAKING TO SAFE PLACE. ALLOW MOLTEN SPILLS TO SOLIDIFY TO EA SE CLEANUP. PVNT RUNOFF TO WATERWAYS. (ING 4)

Neutralizing Agent:NCNE SPECIFIED BY MANUFACTURER.

=====
 ===== Handling and Storage =====
 =====

Handling and Storage Precautions:FOLLOW RECOMS ON LABEL & IN TECHNICAL LITERATURE. MINIMIZE INHALATION OF DUST & CONTACT W/SKIN & EYES. PROVIDE ADEQUATE VENTILATION.

Other Precautions:STORE CLSD, LABELED CNTNRS IN COOL, DRY, WELL-VENT AREA AWAY FROM SOURCES OF HEAT & IGNIT. PROT CNTNRS FROM PHYS DMG. MAINTAIN GOOD HOUSEKEEPING. EMPLOY BOND/GROUND/VENTING & EXPLO, RELIEF PROVISIONS IN ACCORD W/ACCEPTED ENGINEERING PRACTS.

=====
 ===== Exposure Controls/Personal Protection =====
 =====

Respiratory Protection:WHEN DUST & PWDR ARE NOT ADEQ CONTROLLED, USE ONE OF FOLLOWING NIOSH APPRVD RESPS: TYPE C SUPPLIED-AIR RESP IN PRESS DEMAND/CONTINUOUS FLOW MODE & EQUIPPED W/TIGHT FIT FACEPIECE; AIR-PURIFYING RESP EQ UIPPED W/FULL FACEPIECE & HIGH (ING 7)

Ventilation:VENT REQS MUST BE LOCALLY DETERM TO LIM EXPOS TO PROCESS FUMES IN WORKPLACE. DESIGN TECHNIQUES & GUIDELINES MAY (ING 9)

Protective Gloves:CHEMICAL RESISTANT GLOVES.

Eye Protection:ANSI APPRVD CHEM WORKERS GOGGLES .

Other Protective Equipment:ANSI APPRVD EYE WASH & DELUGE SHOWER . APPROPRIATE IMPERVIOUS PROT CLOTHING SUCH AS FULL WET SUIT & RUBBER BOOTS.

Work Hygienic Practices:USE GOOD INDUSTRIAL HYGIENE PRACTICES.

Supplemental Safety and Health

FIRE FIGHT PROC: CLOUD CNDTNS. EXPLO HAZS: BLACK SMOKE, CARBON DIOXIDE & HYDROCARB FRAGMENTS. EFTS OF OVEREXP: WEAKLY INDUCE PROGESTERONE RECEPTOR IN HUMAN MCF7 CELLS. FIRST AID: AIRWAY IS NOT OBSTRUC TED. BEGIN CPR IF NOT BRTHG. IF CONSCIOUS, GIVE VICTIM 1 GLASS WATER. DO NOT INDUCE VOMIT UNLESS INSTRUCTED TO DO(ING 2)

=====
 ===== Physical/Chemical Properties =====
 =====

Boiling Pt:B.P. Text:428F,220C

Melt/Freeze Pt:M.P/F.P Text:313F,156C

Vapor Pres:0.2 @170C

Vapor Density:8.1

Spec Gravity:1.195 (H*2O=1)

Evaporation Rate & Reference:NEGLIGIBLE

Solubility in Water:SLIGHT

Appearance and Odor:WHITE CRYSTALLINE SOLID WITH PHENOLIC ODOR.

Percent Volatiles by Volume:NEGLIG

=====
 ===== Stability and Reactivity Data =====
 =====

Stability Indicator/Materials to Avoid:YES

AVOID CONTACT WITH STRONG OXIDIZING AGENTS AND HALOGENS.

Stability Condition to Avoid:AVOID EXPOSURE TO HIGH TEMPERATURES, FLAMES, SPARKS, HOT SURFS/OTHER IGNIT SOURCES.

Hazardous Decomposition Products:HAZ DECOMP PRODS MAY INCL PHENOLS, ALKYLPHENOLS, HYDROCARBON FRAGMENTS, CARBON MONOXIDE AND CARBON DIOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods: PRODUCT IS NOT RCRA HAZARDOUS WASTE. RECYCLING IS ENCOURAGED. PLACE IN TIGHTLY SEALED, LABELED CONTAINERS FOR DISPOSAL BY LICENSED CONTRACTOR/BURN IN APPROVED INCINERATOR IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.

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Material Safety Data Sheet

4'-Chloroacetoacetanilide, 98%

ACC# 81797

Section 1 - Chemical Product and Company Identification

MSDS Name: 4'-Chloroacetoacetanilide, 98%**Catalog Numbers:** AC158550000, AC158550050, AC158551000, AC158555000**Synonyms:** Butanamide, N-(4-Chlorophenyl)-3-Oxo-; N-(4-Chlorophenyl)-3-Oxobutanamide.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
101-92-8	Butanamide, N-(4-Chlorophenyl)-3-Oxo-	98	202-989-6

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: light beige solid.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: No data found.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT

induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Butanamide, N-(4-Chlorophenyl)-3-Oxo-	none listed	none listed	none listed

OSHA Vacated PELs: Butanamide, N-(4-Chlorophenyl)-3-Oxo-: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: light beige

Odor: none reported

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 131.00 - 134.00 deg C

Decomposition Temperature: Not available.

Solubility: Not available.

Specific Gravity/Density: Not available.

Molecular Formula: C₁₀H₁₀ClNO₂

Molecular Weight: 211.65

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation, excess heat, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products: Hydrogen chloride, carbon monoxide, oxides of nitrogen, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:

CAS# 101-92-8: AK4375000

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 101-92-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 101-92-8 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 101-92-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 101-92-8: 2

Canada - DSL/NDSL

CAS# 101-92-8 is listed on Canada's NDSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
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MSDS Creation Date: 9/02/1997

Revision #5 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Material Safety Data Sheet

Dicumyl peroxide

ACC# 02914

Section 1 - Chemical Product and Company Identification

MSDS Name: Dicumyl peroxide**Catalog Numbers:** AC349880050, AC349881000, AC349885000**Synonyms:** Bis(alpha,alpha-dimethylbenzyl)peroxide; Perkadox BC; DCP; organic peroxides; polymerization initiators.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
80-43-3	Dicumyl peroxide	99	201-279-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white to pale yellow crystalline powder.

Warning! Organic peroxide. Heat or contamination may cause hazardous decomposition. Peroxides and decomposition products are flammable and can ignite with explosive force if confined. Causes eye, skin, and respiratory tract irritation. Keep refrigerated. (Store below 4°C/39° F.)

Target Organs: Respiratory system, eyes, skin.**Potential Health Effects****Eye:** Causes eye irritation. Animal (rabbits) tests with dicumyl peroxide as a 50% solution in corn oil resulted in slight irritation but no corneal damage.**Skin:** Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May be harmful if absorbed through the skin. Not expected to cause an allergic skin reaction.**Ingestion:** May cause irritation of the digestive tract.**Inhalation:** Causes respiratory tract irritation. May be harmful if inhaled.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and

lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Do not induce vomiting. Get medical aid. Wash mouth out with water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Strong oxidizer. Contact with other material may cause fire. ~~This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.~~

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Flash Point: > 110 deg C (> 230.00 deg F)

Autoignition Temperature: > 380 deg C (> 716.00 deg F)

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 2; Special Hazard: OX

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. ~~Avoid generating dusty conditions. Remove all sources of ignition.~~ Provide ventilation. Use only non-sparking tools and equipment.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. ~~Minimize dust generation and accumulation.~~ Avoid contact with eyes, skin, and clothing. Avoid breathing dust.

Storage: Store in a tightly closed container. Keep away from strong acids. Keep refrigerated. (Store below 4°C/39°F.) Keep away from reducing agents. Keep away from polymerization catalysts. Do not exceed 30°C (86°F).

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs

Dicumyl peroxide	none listed	none listed	none listed
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OSHA Vacated PELs: Dicumyl peroxide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Appearance: white to pale yellow

Odor: distinct - lemon - menthol odor

pH: Not available.

Vapor Pressure: 15.4 mm Hg @ 38 deg C

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 38-41 deg C

Decomposition Temperature: Not available.

Solubility: Insoluble.

Specific Gravity/Density: 1.02 @ 45°C

Molecular Formula: C₁₈H₂₂O₂

Molecular Weight: 270.37

Section 10 - Stability and Reactivity

Chemical Stability: A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by direct contact with incompatible substances or by thermal decomposition at and above the SADT (see Section 16). This product is stable at ambient temperatures but may decompose if exposed to temperatures above 158°F (70°C).

Conditions to Avoid: Dust generation, excess heat, contamination.

Incompatibilities with Other Materials: Strong oxidizing agents, reducing agents, strong acids, strong bases, polymerization catalysts.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, methane.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 80-43-3: SD8150000

LD50/LC50:

CAS# 80-43-3:

Oral, mouse: LD50 = 5000 mg/kg;

Oral, rat: LD50 = 4100 mg/kg;

Oral, rat: LD50 = 6000 mg/kg;

Tests in rabbits with dicumyl peroxide as a 50% solution in corn oil resulted in slight irritation but no corneal damage.

Carcinogenicity:

CAS# 80-43-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.

Teratogenicity: No data available.

Reproductive Effects: No data available.

Mutagenicity: No data available.

Neurotoxicity: No data available.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.

Environmental: No information available.

Physical: No information available.

Other: Do not empty into drains.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ORGANIC PEROXIDE TYPE F, SOLID	Organic Peroxide Type F, Solid
Hazard Class:	5.2	5.2
UN Number:	UN3110	UN3110
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 80-43-3 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 80-43-3 can be found on the following state right to know lists: New Jersey.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XI O N

Risk Phrases:

R 36/38 Irritating to eyes and skin.

R 7 May cause fire.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 14A Keep away from acids, reducing agents and polymerisation catalysts.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

S 3/7 Keep container tightly closed in a cool, well-ventilated place

WGK (Water Danger/Protection)

CAS# 80-43-3: 2

Canada - DSL/NDSL

CAS# 80-43-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of C, D2B, F.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 7/25/2000

Revision #2 Date: 1/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Material Safety Data Sheet

Dimethyl isophthalate, 99%

ACC# 95827

Section 1 - Chemical Product and Company Identification

MSDS Name: Dimethyl isophthalate, 99%**Catalog Numbers:** AC186510000, AC186510025, AC186510250, AC186515000, AC408400030, AC408405000 AC408405000**Synonyms:** Dimethyl 1,3-benzenedicarboxylate; Dimethyl m-phthalate; DMIP.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1459-93-4	Dimethyl isophthalate	99	215-951-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Warning! Causes eye irritation. May cause skin and respiratory tract irritation.**Target Organs:** Eyes.**Potential Health Effects****Eye:** Causes eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea.**Inhalation:** Dust is irritating to the respiratory tract.**Chronic:** Some adverse reproductive effects were seen in animal studies. Few defects occurred when rats were given injections of dimethyl phthalate intraperitoneally on gestational days 5, 10 and 15.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel.

Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. ~~Dust from this material can form explosive organic dust cloud.~~

Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire.

Flash Point: 138 deg C (280.40 deg F)

Autoignition Temperature: Not applicable.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. ~~Avoid generating dusty conditions.~~ Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. ~~Minimize dust generation and accumulation.~~ Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing dust.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Dimethyl isophthalate	none listed	none listed	none listed

OSHA Vacated PELs: Dimethyl isophthalate: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: None reported.

pH: Not available.

Vapor Pressure: 0.0014 mm Hg @ 25 deg C

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 282 deg C

Freezing/Melting Point: 65-68 deg C

Decomposition Temperature: Not available.

Solubility: Insoluble.

Specific Gravity/Density: 1.194 g/cm³

Molecular Formula: C₁₀H₁₀O₄

Molecular Weight: 194.19

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Dust generation, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 1459-93-4: NT2540000

LD50/LC50:

CAS# 1459-93-4:

Draize test, rabbit, eye: 500 mg/24H Mild;

Carcinogenicity:

CAS# 1459-93-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: Boys of moms highly exposed to phthalates show stunted genitals. The higher the levels of phthalates in the mothers during the final months of pregnancy, the less masculine their

boys were when examined by pediatricians. (Pittsburgh Post-Gazette 5/27/05)

Reproductive Effects: The phthalate esters have been the subject of interest because of the reproductive and developmental toxicity of some members of this group such as DEHP. DEHP is considered one of the phthalate esters with little potential for reproductive toxicity.

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.

Environmental: No information available.

Physical: No information available.

Other: Similar chemicals are used in insect repellent.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 1459-93-4 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 1459-93-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 1459-93-4: No information available.

Canada - DSL/NDSL

CAS# 1459-93-4 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 4/06/1998

Revision #6 Date: 7/28/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

PFALTZ & BAUER INC -- 3,5-DINITROBENZOIC ACID, D46720 -- 6810-00N056363

===== Product Identification =====

Product ID:3,5-DINITROBENZOIC ACID, D46720

MSDS Date:10/15/1986

FSC:6810

NIIN:00N056363

MSDS Number: BWNDK

=== Responsible Party ===

Company Name:PFALTZ & BAUER INC

Address:172 E. AURORA ST

City:WATERBURY

State:CT

ZIP:06708

Country:US

Info Phone Num:203-574-0075

Emergency Phone Num:800-424-9300 (CHEMTREC)

CAGE:IO568

=== Contractor Identification ===

Company Name:PFALTZ & BAUER INC

Address:172 EAST AURORA ST

Box:City:WATERBURY

State:CT

ZIP:06708

Country:US

Phone:203-574-0075

CAGE:IO568

Company Name:PFALTZ AND BAUER, INC.

Address:172-EAST AURORA STREET

City:WATERBURY

State:CT

ZIP:06708

Country:US

Phone:203-574-0075

CAGE:93272

===== Composition/Information on Ingredients =====

Ingred Name:BENZOIC ACID, 3-5-DINITRO-; (3,5-DINITROBENZOIC ACID)

CAS:99-34-3

RTECS #:DG9140700

OSHA PEL:N/K

ACGIH TLV:N/K

Ingred Name:SUPDAT:REACTION OF INDIVIDUAL. INHAL:REMOVE FROM EXPOS INTO
FRESH AIR. CONSULT MED PERS IMMED IF AN ADVERSE (ING 3)

RTECS #:9999999ZZ

Ingred Name:ING 2:REACTION DEVELOPS.

RTECS #:9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.

Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:EYE:IRRIT. SKIN:IRRIT. SKIN

ABSORPTION:NO DATA FROM LAB ANIMAL DERMAL ABSORPTION STUDIES FOUND.

MFRS EXPERIENCE W/MATL SUGGESTS ABSORPTION THRU SKIN IS NOT LIKELY TO OCCUR. INGEST:NO INFO FOUND REGARD ING PUBLISHED LAB ORAL TOX TESTING OF MATL. INHAL:NO TLV/PEL PUBLISHED. NO DATA AVAIL FROM LAB ANIMAL (EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT

Effects of Overexposure:HLTH HAZS:INHALATION TESTING. NO DATA FROM MFRS EXPERIENCE TO RECOMMEND A WORK PLACE EXPOSURE GUIDELINE. MATERIAL MAY IRRITATE RESPIRATORY TRACT. AVOID INHAL OF DUST. EFFECTS OF OVEREXPOSURE:MATERIAL SHOULD BE CONSIDERED AN IRRITANT TO EYES, SKIN AND UPPER RESPIRATORY TRACT.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

=====
 ===== First Aid Measures =====
 =====

First Aid:EYES:IMMED FLUSH W/FLOWING WATER CONTINUALLY FOR AT LST 15 MIN. CONSULT MED PERS FOR FOLLOWUP EXAMINATION. SKIN:THORO RINSE W/SOAP & WATER FOLLOWING CONT. IN THE EVENT IRRIT DOES DEVELOP, CONSULT MED PERS IMMED. INGEST:IF PERSON IS CONSCIOUS, ATTEMPT TO DILUTE SUBSTANCE BY DRINKING WATER/MILK. DISCONTINUE IF PERSON BECOMES NAUSEOUS. SEEK MED ATTN IMMED. TREAT SYMPTOMATICALLY, BASED UPON (SUP DAT)

=====
 ===== Fire Fighting Measures =====
 =====

Flash Point Method:OC

Flash Point:NOT KNOWN

Extinguishing Media:WATER FOG, CARBON DIOXIDE, DRY CHEMICAL POWDER, FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:MATL WILL NOT IGNITE. MATL WILL MELT AT APPROX 170C & CHAR IN PRESENCE OF OPEN FLAMES/OTHER HIGH TEMP SOURCES. THEMAL DECOMP MAY RESULT IN RLS OF (SUPP DATA)

=====
 ===== Accidental Release Measures =====
 =====

Spill Release Procedures:COLLECT AND CONTAIN FOR SALVAGE OR DISPOSAL. DRY METHODS OF COLLECTIONS, SUCH AS SHOVELING, SWEEPING, VACUUMING ARE RECOMMENDED. UTILIZE THE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT LISTED IN CONTROL MEASURES.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
 ===== Handling and Storage =====
 =====

Handling and Storage Precautions:MATERIAL MAY CAUSE IRRITATION TO THE EYES, SKIN AND UPPER RESPIRATORY TRACT. AVOID CONTACT.

Other Precautions:DO NOT STORE NEAR ALKALI MATERIAL.

=====
 ===== Exposure Controls/Personal Protection =====
 =====

Respiratory Protection:A NIOSH/MSHA APPROVED RESPIRATOR FOR DUST IS RECOMMENDED. MFR UTILIZES AN A.O. R2090 DUST RESPIRATOR WITH R90 FILTER PADS.

Ventilation:LOCAL VENT IS RECOMMENDED IN PROCESSES OR DURING MATERIAL HANDLING WHERE DUST COULD BE RELEASED INTO THE WORK ENVIRON.

Protective Gloves:IMPERVIOUS .

Eye Protection:ANSI APPRVD CHEM WORKER GOGGLES .

Other Protective Equipment:USE PROT CLTHG TO MINIMIZE POSS OF SKIN CONT. SPECIFIC ITEMS SUCH AS APRONS/BODY COVERALLS WILL DEPEND UPON OPERATION.

Work Hygienic Practices:FOLLOWING HNDLG OF MATL, WASH POTNTLY CONTACTED SKIN AREAS W/SOAP & WATER. LAUNDER CONTAMINATED CLOTHING PRIOR TO REUSE.

Supplemental Safety and Health

SOL IN H*2O:0.1G PER 100G @ 25C, 1G IN 53ML BOILING. EXPLO HAZ:POTNTLY DANGEROUS NO*X VAPS. INHAL OF NO*X VAPS IS ALWAYS POTNTLY SERIOUS & PERSONS SO EXPOSED SHOULD BE KEPT UNDER OBSERVATION FOLLOWING SUCH AN EXPOSURE. MATLS TO AVOID:MAY CAUSE AUTOIGNIT TO OCCUR. FIRST AID PROC:JUDGEMENT OF MD IN RESPONSE TO (ING 2)

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:>318F,>159C

Solubility in Water:SUPP DATA

Appearance and Odor:WHITE TO SLIGHTLY YELLOW POWDER, NO ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG BASE. GRINDING & MIXING OF MATL IN PRESENCE OF DRY ALKALI (I.E., SODIUM HYDROXIDE, POTASSIUM HYDROXIDE) (SUP DAT)

Stability Condition to Avoid:AVOID OPEN FLAMES OR OTHER HIGH TEMPERATURE SOURCES WHICH MIGHT CAUSE THERMAL DECOMPOSITION.

Hazardous Decomposition Products:THERMAL DECOMPOSITION MAY RESULT IN A RELEASE OF NO*X VAPORS.

===== Disposal Considerations =====

Waste Disposal Methods:SPILLED MATERIAL IS NOT CONSIDERED TO BE A COMMERCIAL PRODUCT REGULATED BY THE US EPA RESOURCE CONSERVATION AND RECOVERY ACT (RCRA). DISPOSE OF SPILLED AND EMPTY CONTAINERS IN ACCORDANCE WITH ALL LOCA L, STATE AND FEDERAL REGULATIONS.

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ACROS ORGANICS -- FUMARIC ACID,22044-1000 -- -

===== Product Identification =====

Product ID:FUMARIC ACID,22044-1000

MSDS Date:07/16/1996

FSC:NIIN:Submitter:N EN

Status Code:A

MSDS Number: CKJJQ

=== Responsible Party ===

Company Name:ACROS ORGANICS

Address:ONE REAGENT LANE

City:FAIRLAWN

State:NJ

ZIP:07410

Country:US

Info Phone Num:800-227-6701

Emergency Phone Num:800-424-9300

Chemtrec Ind/Phone:(800)424-9300

CAGE:ACROS

=== Contractor Identification ===

Company Name:ACROS ORGANICS

Address:ONE REAGENT LANE

Box:City:FAIRLAWN

State:NJ

ZIP:07410

Country:US

Phone:800-227-6701

CAGE:ACROS

===== Composition/Information on Ingredients =====

Ingrid Name:FUMARIC ACID. LD50:(ORAL,RAT) 9300 MG/KG.

CAS:110-17-8

RTECS #:LS9625000

EPA Rpt Qty:5000 LBS

DOT Rpt Qty:5000 LBS

===== Hazards Identification =====

LD50 LC50 Mixture:SEE INGREDIENT.

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE: EYE: CAUSES IRRITATION. SKIN: MAY CAUSE IRRITATION. INGESTION: THE TOXICOLOGICAL PROPERTIES OF THIS SUBSTANCE HAVE NOT BEEN FULLY INVESTIGATED. INHALATION: MAY CAUSE RESPIRATORY TRACT IRRITATION. THE TOXICOLOGICAL PROPERTIES OF THIS SUBSTANCE HAVE NOT BEEN THOROUGHLY INVESTIGATED. CHRONIC: NOT AVAILABLE.

Explanation of Carcinogenicity:FUMARIC ACID - NOT LISTED BY ACGIH, IARC, NIOSH, NTP OR OSHA.

Effects of Overexposure:SEE HEALTH HAZARDS.

===== First Aid Measures =====

First Aid:EYES:FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL AID. SKIN: GET MEDICAL AID. FLUSH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES.

INGESTION: GET MEDICAL AID. WASH OUT MOUTH WITH WATER. INHALATION:
REMOVE FROM EXPOSURE TO FRESH AIR IMMEDIATELY. IF NOT BREATHING,
GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE
OXYGEN. GET MEDICAL AID. NOTES TO MD: TREAT SYMPTOMATICALLY AND
SUPPORTIVELY.

===== Fire Fighting Measures =====

Flash Point:=230.C, 446.F
Autoignition Temp:=375.C, 707.F
Lower Limits:NOT AVAIL
Upper Limits:NOT AVAIL
Extinguishing Media:IN CASE OF FIRE, USE WATER, DRY CHEMICAL, CHEMICAL
FOAM, OR ALCOHOL-RESISTANT FOAM.
Fire Fighting Procedures:USE NIOSH APPROVED SCBA AND FULL PROTECTIVE
EQUIPMENT .
Unusual Fire/Explosion Hazard:NFPA RATING: NOT PUBLISHED.

===== Accidental Release Measures =====

Spill Release Procedures:USE PROPER PERSONAL PROTECTIVE EQUIPMENT AS
INDICATED IN EXPOSURE CONTROLS, PERSONAL PROTECTION SECTION. SWEEP
UP, THEN PLACE INTO A SUITABLE CONTAINER FOR DISPOSAL.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID BREATHING DUST, VAPOR, MIST OR
GAS. AVOID CONTACT WITH SKIN AND EYES. STORE IN A COOL, DRY PLACE.
STORE IN A TIGHTLY CLOSED CONTAINER.
Other Precautions:IRRITATING TO EYES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:WEAR A NIOSH OR EUROPEAN STANDARD EN 149
APPROVED FULL-FACEPIECE AIRLINE RESPIRATOR IN THE POSITIVE PRESSURE
MODE WITH EMERGENCY ESCAPE PROVISIONS.
Ventilation:USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP
AIRBORNE CONCENTRATIONS BELOW THE PERMISSIBLE EXPOSURE LIMITS.
Protective Gloves:IMPERVIOUS GLOVES .
Eye Protection:ANSI APPROVED CHEMICAL WORKERS GOGGLES .
Other Protective Equipment:ANSI APPROVED EYE WASH & DELUGE SHOWER .
WEAR APPROPRIATE PROTECTIVE CLOTHING TO MINIMIZE CONTACT WITH SKIN
AND TO PREVENT SKIN EXPOSURE.
Supplemental Safety and Health
PHYSICAL AND CHEMICAL PROPERTIES: MOLECULAR FORMULA: HO2CCH=CHCO2H.
MOLECULAR WEIGHT: 116.07.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:NOT AVAILABLE
Melt/Freeze Pt:>299.C, 570.2F
M.P/F.P Text:299C - 300C
Decomp Temp:>350.C, 662.F
Vapor Pres:1.7 MM HG @ 165C
Spec Gravity:1.6250 G/CM3
pH:NOT AVAILABLE
Viscosity:NOT AVAILABLE
Solubility in Water:0.63 G/100 ML @ 25C
Appearance and Odor:WHITE CRYSTALLINE POWDER; NO ODOR AVAILABLE.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
NOT AVAILABLE.
Stability Condition to Avoid: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.
Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE.
Conditions to Avoid Polymerization: HAS NOT BEEN REPORTED.

===== Toxicological Information =====

Toxicological Information: SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

===== Ecological Information =====

Ecological: FOR FURTHER INFORMATION, CONTACT ACROS ORGANICS.

===== Disposal Considerations =====

Waste Disposal Methods: DISPOSE OF IN A MANNER CONSISTENT WITH FEDERAL, STATE AND LOCAL REGULATIONS.

===== MSDS Transport Information =====

Transport Information: U.S. DOT: SHIPPING NAME: NO INFORMATION AVAILABLE. HAZARD CLASS; UN NUMBER; PACKING GROUP: N/P. -- I.M.O./I.A.T.A./R.I.D./A.D.R.: SHIPPING NAME; HAZARD CLASS; UN NUMBER; PACKING GROUP: N/P. -- CANADIAN T.D.G.: SHIPPING NAME: NO INFORMATION AVAILABLE. HAZARD CLASS; UN NUMBER; PACKING GROUP: N/P.

===== Regulatory Information =====

Federal Regulatory Information: EUROPEAN/INTERNATIONAL REGULATIONS: EUROPEAN LABELING I/A/W EC DIRECTIVES: HAZARD SYMBOLS: XI. RISK PHRASES: R 36 - IRRITATING TO EYES. SAFETY PHRASES: S 26 - IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE. WGK (WATER DANGER/PROTECTION): CAS #110-17-8: 1. CANADA: CAS #110-17-8 IS LISTED ON CANADA'S DSL/NDSL LIST; CAS #110-17-8 IS NOT LISTED ON CANADA'S INGREDIENT DISCLOSURE LIST. EXPOSURE LIMITS: N/P. U.S. FEDERAL: TSCA: CAS #110-17-8 IS LISTED ON THE TSCA INVENTORY.

===== Other Information =====

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WRIGHT CORP -- HEXAMETHYLENE TETRAMINE, TECHNICAL, FREE-FLOW -- 6810-00N089527

=====
Product Identification
=====

Product ID:HEXAMETHYLENE TETRAMINE, TECHNICAL, FREE-FLOW

MSDS Date:01/01/1995

FSC:6810

NIIN:00N089527

Status Code:A

MSDS Number: CHWFR

=== Responsible Party ===

Company Name:WRIGHT CORP

Box:402

City:RIEGELWOOD

State:NC

ZIP:28456

Country:US

Info Phone Num:910-655-2263

Emergency Phone Num:800-424-9300 (CHEMTREC)

CAGE:JO728

=== Contractor Identification ===

Company Name:WRIGHT CHEMICAL CORP

Address:ACME STATION

Box:City:RIEGELWOOD

State:NC

ZIP:28456

Country:US

CAGE:5U648

Company Name:WRIGHT CORP

Box:402

City:RIEGELWOOD

State:NC

ZIP:28456

Country:US

Phone:910-655-2263

CAGE:JO728

=====
Composition/Information on Ingredients
=====

Ingred Name:HEXAMETHYLENETETRAMINE

CAS:100-97-0

RTECS #:MN4725000

Fraction by Wt: 95-96%

OSHA PEL:N/K

ACGIH TLV:N/K

Ingred Name:SILICA

RTECS #:9999999ZZ

Fraction by Wt: 0-5%

OSHA PEL:N/K

ACGIH TLV:N/K

Ingred Name:SUP DAT: CNDTNS ARE PRESENT IN YOUR FACILITY PERS

MONITORING IS ADVISED & ALL PREC SHOULD BE TAKEN TO ENSURE (ING 4)

RTECS #:9999999ZZ

Ingred Name:ING 3: COMPLIANCE W/OSHA'S FORMALDEHYDE STD (PROMULGATED
2/2/88). PROD IS ALSO INCOMPATIBLE W/STRONG OXIDIZING AGENTS.

RTECS #:9999999ZZ

Ingred Name:HAZ DECOMP PROD: FORMALDEHYDE, & NITROGEN OXIDES MAY BE
PRESENT ALSO. EXTREME TEMPS SUCH AS THOSE FOUND IN (ING 6)
RTECS #:9999999ZZ

Ingred Name:ING 5: FOUNDRY OPERATIONS MAY POTENTIALLY RESULT IN
FORMATION OF CARCIN N-NITROSO CMPDS SUCH AS N-NITROSODIMETHYLAMINE.
RTECS #:9999999ZZ

Ingred Name:EFTS OF OVEREXP: RESPONSIBLE FOR SKIN RASH. (WARNING:
FORMALDEHYDE MAY BE POTENTIAL CANCER HAZ.) A STUDY (ING 8)
RTECS #:9999999ZZ

Ingred Name:ING 7: CONDUCTED IN 1955 (WATANABLE & SUGIMOTO) REPORTED
THAT HEXAMINE PRDCED TUMORS IN RATS WHEN INJECTED (ING 9)
RTECS #:9999999ZZ

Ingred Name:ING 8: SUBCUTANEOUSLY. HOWEVER, THIS STUDY WAS NOT WELL
CONTROLLED & SEVERAL OTHER STUDIES HAVE QUESTIONED THE (ING 10)
RTECS #:9999999ZZ

Ingred Name:ING 9: VALIDITY OF 1955 STUDY (DELLA PORTA ET AL, 1968;
BRENDDEL, 1964; KITCHENS, 1971). HEXAMINE IS NOT LISTED (ING 11)
RTECS #:9999999ZZ

Ingred Name:ING 10: BY IARC AS CARCIN TO HUMANS. HEXAMINE HAS BEEN
SHOWN TO HAVE MUTAGENIC EFTS IN DROSOPHILA (AUERBACH, 1951).
RTECS #:9999999ZZ

Ingred Name:FIRST AID PROC: REMOVE CONTAMINATED CLOTHING AND WASH. IF A
RASH DEVELOPS SEEK MEDICAL ATTENTION.
RTECS #:9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE: HEXAMINE IS A KNOWN SKIN
IRRITANT & SENSITIZER. PROD MAY CAUSE ALLERGIC SKIN RXNS. DUST MAY
CAUSE IRRIT OF NOSE, MUC MEMBS & UPPER RESP TRACT. PROD MAY ACT AS
NUISANCE DUST. CHRONIC: HEXAMINE I S A KNOWN SKIN IRRITANT &
SENSITIZER. PRLNG SKIN CONT MAY PRDCE RASH TO AFFECTED AREA (IN
PARTICULAR (EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT.
Effects of Overexposure:HLTH HAZ: WRISTS, ANKLES, BELTLINE, & COLLAR
AREA OF NECK) SIMILAR IN APPEAR TO POIS IVY. HEXAMINE MAY DECOMPOSE
TO FORMALDEHYDE IN PRESENCE OF PERSPIRATION (SLIGHTLY ACIDIC PH
4-6.5). FORMALDEHYDE IS TRAPPED IN SWEAT PORES OF SKIN & IS THEN
OXIDIZED TO FORMIC ACID, WHICH IS BELIEVED TO BE THE ACTUAL AGENT
(ING 7)
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:INHAL: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL
RESPIRATION (CPR). IF BREATHING IS LABORED GIVE OXYGEN. SEEK MED
ATTN. INGEST: INDUCE VOMIT BY GIVING 2 GLASSES OF WATER & PRESSING
2 FING ERS DOWN THROAT. NEVER GIVE ANYTHING TODRINK TO AN UNCON

VICTIM. SEEK MED ATTN. EYES: IMMED FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MIN. SEEK MED ATTN. SKIN: WASH W/PLENTY OF SOAP & WATER. (ING 12)

=====
Fire Fighting Measures
=====

Flash Point Method:CC
Flash Point:482F,250C
Extinguishing Media:DRY CHEMICAL, CARBON DIOXIDE (CO*2), FOAM AND WATER SPRAY.
Fire Fighting Procedures:WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:CONCENTRATED DUST MAY FORM CLOUD. DRYICE EXPLO HAZ. THIS PROD IS COMBUST & CAN BE READILY IGNITED WHEN FLAME IS APPLIED. IT IS A SEV RELATIVE EXPLO (*SUP DAT)

=====
Accidental Release Measures
=====

Spill Release Procedures:DRY: SWEEP AREA CLEAN, AVOID RAISING A DUST CLOUD. PLACE WASTE IN CONTAINER THAT CAN BE SEALED. LIQUID: DYKE AND CONTAIN LIQUID. PREVENT MATERIAL FROM ENTERING NATURAL WATER SYSTEMS.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:KEEP THIS PRODUCT AWAY FROM HEAT, SPARKS, OPEN FLAME OR ANY IGNITION SOURCE. HEXAMINE IS HYGROSCOPIC AND SHOULD BE STORED IN A COOL, DRY PLACE.
Other Precautions:STORE IN WELL-VENTILATED AREA.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:USE NIOSH APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .
Ventilation:VENTILATION SHOULD BE SUFFICIENT TO REMOVE DUST CLOUDS. LOCAL VENTILATION IS RECOMMENDED.
Protective Gloves:RUBBER GLOVES.
Eye Protection:ANSI APPRVD CHEM WORKERS GOGGLES .
Other Protective Equipment:ANSI APPROVED EMERGENCY EYEWASH AND DELUGE SHOWER . BARRIER CREAMS AS NEEDED. BOOTS. COVERALLS WITH LONG SLEEVES.
Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
BP: 536F,280C, SUBLIMES. EXPLO HAZ: HAZ, 14% IS LIMITING OXYGEN CONC IN AIR/CO*2 ATM REQUIRED TO PVNT IGNIT OF DUST CLOUDS BY ELEC SPK. MATLS TO AVOID: WHILE IN PRESENCE OF WATER. UNDER ABOVE CNDTNS, FREE FORMALDEHYDE & AMMONIA MAY BE LIBERATED. (WARNING: FORMALDEHYDE MAY BE A CANCER HAZ.) IF ONE/MORE OF THESE (ING 3)

=====
Physical/Chemical Properties
=====

Boiling Pt:B.P. Text:SUP DAT
Melt/Freeze Pt:M.P/F.P Text:505F,263C
Vapor Pres:NOT VOLAT
Spec Gravity:1.27
pH:8-8.5
Solubility in Water:READILY DISSOLVES
Appearance and Odor:WHITE, COLORLESS CRYSTALLINE SOLID OR LIQUID, WITH SWEET ODOR.

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid: YES

HEXAMINE WILL HYDROLIZE IN PRESENCE OF ACIDS/ACIDIC ENVIRONS. THIS PROD
MAY ALSO DECOMPOSE W/HEAT (150-300C) (SUP DAT)

Stability Condition to Avoid: NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products: HYDROGEN CYANIDE IS A MAJOR DECOMP
PROD AT TEMPS >800C (>1472F). CARBON MONOXIDE, AMMONIA, CARBON
DIOXIDE, (ING 5)

=====
Disposal Considerations
=====

Waste Disposal Methods: FOLLOW ALL LOCAL, STATE AND FEDERAL REGULATIONS
CONCERNING THE DISPOSAL OF THIS MATERIAL IN YOUR AREA.

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assume responsibility for the suitability of this information to their
particular situation.

SIGMA CHEMICAL COMPANY -- 43496-5 2 HYDROXYETHYL CELLULOSE AVERAGE MV
CA 90,000 -- 6810-00F056837

=====
Product Identification
=====

Product ID:43496-5 2 HYDROXYETHYL CELLULOSE AVERAGE MV CA 90,000

MSDS Date:07/01/1995

FSC:6810

NIIN:00F056837

Status Code:A

MSDS Number: CHZVC

=== Responsible Party ===

Company Name:SIGMA CHEMICAL COMPANY

Address:3050 SPRUCE ST

Box:14508

City:SAINT LOUIS

State:MO

ZIP:63178-5000

Country:US

Info Phone Num:314-771-5765/800-325-3010

Emergency Phone Num:314-771-5765/800-325-3010

CAGE:21076

=== Contractor Identification ===

Company Name:ALDRICH CHEMICAL CO INC

Address:1001 WEST ST PAUL AVE

Box:355

City:MILWAUKEE

State:WI

ZIP:53233

Country:US

Phone:414-273-3850

CAGE:60928

Company Name:FLUKA CHEMICAL CORP

Address:1001 WEST ST PAUL

Box:City:MILWAUKEE

State:WI

ZIP:53233

Country:US

Phone:414-273-3850

CAGE:63181

Company Name:SIGMA CHEMICAL COMPANY

Address:3050 SPRUCE ST

Box:14508

City:ST LOUIS

State:MO

ZIP:63178

Country:US

Phone:314-771-5765

CAGE:21076

=====
Composition/Information on Ingredients
=====

Ingred Name:HYDROXYETHYL CELLULOSE, 2-HYDROXYETHYL ETHER CELLULOSE,
NATROSOL

CAS:9004-62-0

RTECS #:FJ5958000

=====
Hazards Identification
=====

LD50 LC50 Mixture:ORAL LD50(RAT): >7000 MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:MAY BE HARMFUL BY

INHALATION/INGESTION/SKIN ABSORPTION. CAUSES EYE & SKIN IRRITATION.
MATERIAL IS IRRITATING TO MUCOUS MEMBRANES & UPPER RESPIRATORY
TRACT. ABSORPTION INTO THE BODY LEADS TO THE FORMATION OF
METHEMOGLOBIN WHICH CAUSES CYANOSIS. ONSET MAY BE DELAYED 2-4
HOURS/LONGER. MAY AFFECT THE BLOOD/NERVES.

Explanation of Carcinogenicity:NONE

Effects of Overexposure:IRRITATION, CYANOSIS

===== First Aid Measures =====

First Aid:EYES: IMMEDIATELY FLUSH W/COPIOUS AMOUNTS OF WATER FOR 15
MINS. SKIN: WASH W/SOAP & COPIOUS AMOUNTS OF WATER. INHALATION:
REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NECESSARY. INGESTION: WASH
OUT MOUTH W /WATER IF CONSCIOUS. OBTAIN MEDICAL ATTENTION IN ALL
CASES.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CO2, DRY CHEMICAL POWDER/APPROPRIATE
FOAM

Fire Fighting Procedures:WEAR A SELF CONTAINED BREATHING APPARATUS &
PROTECTIVE CLOTHING TO PREVENT CONTACT W/SKIN & EYES.

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.
STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN/NEAR FLAMMABLE
VAPORS MAY CAUSE FLASH FIRE.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR RESPIRATOR, CHEMICAL SAFETY GOGGLES,
RUBBER BOOTS & HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG & HOLD
FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA & WASH SITE
AFTER MATERIAL PICKUP I S COMPLETE.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN A COOL, DRY PLACE. KEEP
TIGHTLY CLOSED. WEAR SUITABLE PROTECTIVE CLOTHING.

Other Precautions:AVOID INHALATION & CONTACT W/EYES, SKIN & CLOTHING.
AVOID PROLONGED/REPEATED EXPOSURE. PREVENT FORMATION OF STATIC
ELECTRICITY.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST

Protective Gloves:CHEMICAL-RESISTANT

Eye Protection:CHEMICAL SAFETY GOGGLES

Other Protective Equipment:SAFETY SHOWER, EYE BATH

Work Hygienic Practices:REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE
REUSE. WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS

Stability Condition to Avoid:FIRE, STATIC ELECTRICITY
Hazardous Decomposition Products:CO, CO2, ALDEHYDES, CARBOXYLIC ACIDS

===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE/MIX THE MATERIAL W/A COMBUSTIBLE
SOLVENT & BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER
& SCRUBBER. DISPOSE OF IAW/LOCAL, STATE & FEDERAL REGULATIONS.

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particular situation.

CALBIOCHEM -- L-METHIONINE, 4500 -- 6505-00N092490

===== Product Identification =====

Product ID:L-METHIONINE, 4500
MSDS Date:04/27/1999
FSC:6505
NIIN:00N092490
Status Code:A
MSDS Number: CJTCH
=== Responsible Party ===
Company Name:CALBIOCHEM
Box:12087
City:LA JOLLA
State:CA
ZIP:92039-2087
Country:US
Info Phone Num:800-854-3417
Emergency Phone Num:800-424-9300 (CHEMTREC)
Resp. Party Other MSDS Num.:4500
Chemtrec Ind/Phone:(800)424-9300
CAGE:29089
=== Contractor Identification ===
Company Name:CALBIOCHEM
Box:12087
City:LA JOLLA
State:CA
ZIP:92039-2087
Country:US
Phone:619-450-5558; 800-854-3417
CAGE:29089

===== Composition/Information on Ingredients =====

Ingred Name:L-METHIONINE
CAS:63-68-3
RTECS #:PD0457000
Code:F
= Wt:100.
Other REC Limits:N/K
OSHA PEL:N/K
OSHA STEL:N/K
ACGIH TLV:N/K
ACGIH STEL:N/K

===== Hazards Identification =====

LD50 LC50 Mixture:SEE TOXICOLOGICAL INFORMATION.
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INGESTION,
INHALATION OR ABSORPTION THROUGH SKIN. CHRONIC: THERE IS LIMITED
EVIDENCE THAT L-METHIONINE IS MUTAGENIC IN LABORATORY CELL
CULTURES. UNTIL FURTHER TESTING HAS BEEN DONE, IT SHOULD BE
TREATED AS A POSSIBLE MUTAGEN IN HUMANS.
Effects of Overexposure:SEE HEALTH HAZARDS.

===== First Aid Measures =====

First Aid:SKIN: WASH WITH SOAP AND COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES AND WASH BEFORE WEARING. CONSULT A PHYSICIAN. EYES: FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING THE EYELIDS WITH FINGERS. CONSULT A PHYSICIAN. INHALATION: REMOVE TO FRESH AIR AND MONITOR BREATHING. IF BREATHING BECOMES DIFFICULT, GIVE OXYGEN AND CONSULT A PHYSICIAN. IF BREATHING STOPS, GIVE ARTIFICIAL RESPIRATION AND CONSULT A PHYSICIAN. INGESTION: WASH MOUTH OUT WITH WATER AND CONSULT THE LOCAL POISON CENTER AND A PHYSICIAN.

===== Fire Fighting Measures =====

Extinguishing Media: DRY CHEMICAL POWDER, CARBON DIOXIDE, WATER SPRAY, ALCOHOL OR POLYMER FOAM.
 Fire Fighting Procedures: WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT.
 Unusual Fire/Explosion Hazard: UPON THERMAL DECOMPOSITION, IT MAY EMIT TOXIC GASES.

===== Accidental Release Measures =====

Spill Release Procedures: EVACUATE AREA. WEAR A NIOSH APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS, AND HEAVY RUBBER GLOVES. SWEEP UP AND PLACE IN A SUITABLE CONTAINER. AVOID RAISING DUST. HOLD FOR APPROPRIATE DISPOSAL. WASH SPILL SITE AND VENTILATE AREA AFTER MATERIAL PICKUP IS COMPLETE.

===== Handling and Storage =====

Handling and Storage Precautions: STORE IN A TIGHTLY CLOSED CONTAINER IN A COOL, DRY PLACE (+20C). POSSIBLE MUTAGEN. AVOID CONTACT WITH MATERIAL. AVOID PROLONGED OR REPEATED EXPOSURE. LAB SHOULD BE EQUIPPED WITH A SAFETY SHOWER AND AN EYE WASH STATION. WASH THOROUGHLY AFTER HANDLING MATERIAL.
 Other Precautions: MATERIAL SHOULD ONLY BE HANDLED BY QUALIFIED, EXPERIENCED PROFESSIONALS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: USE A NIOSH APPROVED RESPIRATOR.
 Ventilation: HANDLE IN A CHEMICAL FUME HOOD WITH ADEQUATE VENTILATION.
 Protective Gloves: CHEMICAL RESISTANT GLOVES.
 Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES.
 Other Protective Equipment: ANSI APPROVED EMERGENCY EYEWASH AND DELUGE SHOWER.
 Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
 Supplemental Safety and Health
 INGREDIENT INFORMATION: SYNONYM: MET. MOLECULAR WEIGHT: 149.2.
 MOLECULAR FORMULA: C*5H*11NO*2S.

===== Physical/Chemical Properties =====

Melt/Freeze Pt: >280.C, 536.F
 M.P/F.P Text: 280C - 282C
 Solubility in Water: SOLUBLE
 Appearance and Odor: CRYSTALLINE SOLID.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
 AVOID CONTACT WITH STRONG OXIDIZING AGENTS.
 Stability Condition to Avoid: STABLE UNDER NORMAL HANDLING PROCEDURES.
 Hazardous Decomposition Products: UPON THERMAL DECOMPOSITION, MAY EMIT
 TOXIC GASES INCLUDING CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN
 OXIDES, AND SULFUR OXIDES.

===== Toxicological Information =====

Toxicological Information: RTECS #: PD0457000. TOXICITY DATA &
 REFERENCES: ORL; RAT; LD50: 36 G/KG CHANGE IN MOTOR ACTIVITY;
 IMMUNOLOGICAL CHANGES 1983. GIGIENA I SANITARIYA. FOR ENGLISH
 TRANSLATION, SEE HYSAAV. 48(6), 20. IPR; RAT; LD50: 4328 MG/KG
 DYSYPNEA; BODY TEMP DECR 1955. ARCHIVES OF BIOCHEMISTRY &
 BIOPHYSICS. 58, 253. IPR; MUS; LD50: >9500 MG/KG 1981. PROGRESS IN
 MUTATION RESEARCH. 1, 682. REPRO EFTS & REFERENCES: O RL; RAT;
 DOSE: 26100 MG/KG FETOTOXICITY; MUSCULOSKETAL SYS DEVEL ABNORMS
 1975. DEUTSCHE TIERAERZTLICHE WOCHENSCHRIFT. 82, 457. ORL; RAT;
 DOSE: 14720 MG/KG POST-IMPLANTATION MORTALITY 1975. DEUTSCHE TI
 ERAERZTLICHE (OTHER INFO)

===== Ecological Information =====

Ecological: NO INFORMATION AVAILABLE. --TOX INFO: WOCHENSCHRIFT. 82,
 457. ORL; RAT; DOSE: 35 G/KG FETOTOXICITY 1992. TERATOLOGY,
 INTERNATIONAL JOURNAL OF ABNORM DEVEL. 46, 499. GENETIC DATA &
 REFERENCES: OTH; HMN ; DOSE: 2UMOL/L DNA DMG 1982. BIOCHIMICA ET
 BIOPHYSICA ACTA. 696, 15. FBR; HMN; DOSE: 125 MG/L UNSCHEDULED DNA
 SYNTHESIS 1981. PROGRESS IN MUTATION RESEARCH. 1, 517. IPR; GPG;
 DOSE: 500 MG/KG CYTOGEN ETIC ANALYSIS 1970. JOURNAL OF CELL
 BIOLOGY. 47, 190A. LYM; HMN; DOSE: 10 MG/L SISTER CHROMATID
 EXCHANGE 1996. MUTATION RESEARCH. 372, 75. REVIEWS: TOXICOLOGY
 REVIEW REFERENCE 1974. JOURNAL OF AGRICUL TURE & FOOD CHEMISTRY.
 22, 2. (SARA REGS)

===== Disposal Considerations =====

Waste Disposal Methods: COUNTRY, FEDERAL, STATE, & LOCAL REGULATIONS ARE
 VARIED & CHANGE FREQUENTLY. FOR THIS REASON, MANUFACTURER
 RECOMMENDS THAT YOU CONTACT YOUR LOCAL DEPARTMENT OF HEALTH
 SERVICES FOR INFORMATION ON THE D ISPOSAL OF THIS PRODUCT/ARRANGE
 FOR DISPOSAL BY A LICENSED DISPOSAL COMPANY. DISPOSE OF IN
 ACCORDANC E WITH LOCAL, STATE, & FEDERAL REGULATIONS .

===== MSDS Transport Information =====

Transport Information: UN NUMBER: N/A. PROPER SHIPPING NAME: N/A. IATA
 CLASS: N/A. IATA PACKING GROUP: N/A.

===== Regulatory Information =====

Federal Regulatory Information: XN. RISK PHRASES: R40: POSSIBLE RISK OF
 IRREVERSIBLE EFFECTS. SAFETY PHRASES: S22: DO NOT BREATHE DUST.
 S24/25: AVOID CONTACT WITH SKIN AND EYES. S36/37/39: WEAR SUITABLE
 PROTECTIVE CLOTHING, GLOVES A ND EYE/FACE PROTECTION. S45: IN CASE
 OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY.
 State Regulatory Information:

===== Other Information =====

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particular situation.

ALDRICH CHEMICAL CO INC -- PENTAERYTHRITOL, 98%, P475-5 -- 6810-00N065298

===== Product Identification =====

Product ID:PENTAERYTHRITOL, 98%, P475-5

MSDS Date:01/25/1995

FSC:6810

NIIN:00N065298

MSDS Number: CBCTD

=== Responsible Party ===

Company Name:ALDRICH CHEMICAL CO INC

Box:355

City:MILWAUKEE

State:WI

ZIP:53201

Country:US

Info Phone Num:414-273-3850

Emergency Phone Num:414-273-3850

CAGE:60928

=== Contractor Identification ===

Company Name:ALDRICH CHEMICAL CO INC

Address:1001 WEST ST PAUL AVE

Box:355

City:MILWAUKEE

State:WI

ZIP:53233

Country:US

Phone:414-273-3850

CAGE:60928

===== Composition/Information on Ingredients =====

Ingrid Name:PENTAERYTHRITOL

CAS:115-77-5

RTECS #:RZ2490000

Fraction by Wt: 98%

OSHA PEL:15 MG/M3 TDUST

ACGIH TLV:10 MG/M3

===== Hazards Identification =====

LD50 LC50 Mixture:LD50 (ORAL RAT): 19500 MG/KG.

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. CHRONIC: NONE SPECIFIED BY MANUFACTURER. TO THE BEST OF MANUFACTURER'S KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

Explanation of Carcinogenicity:NOT RELEVANT.

Effects of Overexposure:SEE HEALTH HAZARDS.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:EYES: IMMEDIATELY FLUSH W/COPIOUS AMTS OF WATER FOR AT LEAST 15 MIN. SKIN: IMMEDIATELY WASH W/SOAP & COPIOUS AMTS OF WATER. INHAL: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIF RESPIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGEST: WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS.

CALL MD. WASH CONTAMINATED CLOTHING BEFORE REUSE.

=====
Fire Fighting Measures
=====

Extinguishing Media:USE WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:THIS MATERIAL, LIKE MOST MATERIALS IN POWDER FORM, IS CAPABLE OF CREATING A DUST EXPLOSION.

=====
Accidental Release Measures
=====

Spill Release Procedures:WEAR NIOSH/MSHA APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG AND HOLD FOR DISPOSAL. AVOID RAISING DUST. VENTILATE AREA AND WASH SPILL SI TE AFTER MATERIAL PICK-UP IS COMPLETE.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:DO NOT BREATHE DUST. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. KEEP CONTAINER CLOSED. STORE IN A COOL DRY PLACE.

Other Precautions:NONE SPECIFIED BY MANUFACTURER.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:USE NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST REQUIRED.

Protective Gloves:RUBBER GLOVES.

Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS .

Other Protective Equipment:EMERGENCY EYEWASH & DELUGE SHOWER MEETING ANSI DESIGN CRITERIA .

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

=====
Physical/Chemical Properties
=====

Melt/Freeze Pt:M.P/F.P Text:>491F,>255C

Vapor Pres:<1 @ 20C

Appearance and Odor:WHITE CRYSTALS

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS, STRONG ACIDS, ACID CHLORIDES, ACID ANHYDRIDES.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:TOXIC FUMES OF CARBON MONOXIDE, CARBON DIOXIDE.

=====
Disposal Considerations
=====

Waste Disposal Methods:DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND A SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

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AMERICAN CYANAMID CO.
PARSIPPANY, NJ 07054

MSDS NO. AG07153-2
CAS NO. 117-21-5

MATERIAL SAFETY DATA SHEET

DATE: JUN 02, 1997

EMERGENCY TELEPHONE: (973)-683-3100 (U.S.A.)

PRODUCT IDENTIFICATION	TRADE NAME: PHTHALIC ANHYDRIDE SYNONYMS: 3-CHLOROPHTHALIC ANHYDRIDE CL 84,753 CHEMICAL FAMILY: Phthalic anhydrides MOLECULAR FORMULA: O<3>Cl C<8>H<3> MOLECULAR WEIGHT: 182.600 USAGE:
------------------------	---

WARNING STATEMENTS	DANGER: KEEP OUT OF REACH OF CHILDREN. CORROSIVE, CAUSES IRREVERSIBLE EYE DAMAGE. DO NOT GET IN EYES, ON SKIN OR CLOTHING. DO NOT INHALE DUST. WEAR GOGGLES OR FACE SHIELD WHEN HANDLING.
--------------------	--

INGREDIENTS	COMPONENT	CAS. NO.	%	PEL/TLV
	Phthalic Anhydride	117-21-5	100.00	1 ppm
	3-Chloro			6.1 mg/m>3<

REFERENCE: Phthalic Anhydride ACGIH 1991
3-Chloro

PHYSICAL PROPERTIES	APPEARANCE AND ODOR: BOILING POINT: MELTING POINT: VAPOR PRESSURE: BULK DENSITY: VAPOR DENSITY: % VOLATILITY (BY VOL.): OCTANOL / H<2>O PARTITION COEF.: PH: SATURATION IN AIR (BY VOL.): EVAPORATION RATE: SOLUBILITY IN	Tan powdery solid, odorless Decomposes (313<o>C) 123<o>C 11 mm Hg @ 180<o>C Untapped=0.63 gm/ml; tapped=0.71 gm/ml 6.3 (calc'd, Air = 1.0) Not Available Not Available Not Available Not Available Not Available Slightly
---------------------	--	--

MSDS SHEET NO. AG07153-2

PAGE 2

FIRE AND EXPLOSION HAZARD INFORMATION	FLASH POINT: Not Determined FLAMMABLE LIMITS (% BY VOL.): Not Determined AUTOIGNITION TEMP: Not Determined DECOMPOSITION TEMP: 313<o>C
---------------------------------------	---

FIRE EXTINGUISHING MEDIA:

Use water, alcohol foam, dry chemical or carbon dioxide to extinguish fires.

FIRE CONTROL TACTICS:

Wear self-contained positive pressure breathing apparatus and full fire fighting protective clothing.

Keep unnecessary people away. Use as little water as possible. Dike area of fire to prevent run-off. Use spray or fog - solid stream may cause spreading.

Do not decontaminate personnel or equipment, or handle broken packages or containers without protective equipment as specified in the Exposure Control Section. Decontaminate emergency personnel with soap and water before leaving the fire area.

Avoid breathing dusts, vapors and fumes from burning materials. Control run-off water - if water enters a drainage system, advise the authorities downstream.

NFPA HAZARD

RATING	0 Least	1	Flammability
	1 Slight	/ \	/ \
	2 Moderate	1 1	Health Reactivity
	3 High	\ /	\ /
	4 Severe		Special

REACTIVITY DATA	STABILITY:	Stable
	CONDITIONS TO AVOID:	Oxidizing materials may react violently when contacted. May vigorously react upon contact with water.
	POLYMERIZATION:	Will not occur
	CONDITIONS TO AVOID:	None known
	INCOMPATIBLE	HNO ₃ and H ₂ SO ₄ , Oxidizers,
	MATERIALS:	Water
	HAZARDOUS	Not Available
	DECOMPOSITION	
	PRODUCTS:	

HEALTH HAZARD INFORMATION

TOXICITY DATA AND EFFECTS OF OVEREXPOSURE:

ACUTE TOXICITY DATA:

The acute oral LD₅₀ in male rats was determined to be greater than 5,000 mg/kg body weight, indicating that the material is relatively non-toxic by ingestion in a single

□

MSDS SHEET NO. AG07153-2

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dose.

The acute dermal LD₅₀ in male rabbits was calculated to be greater than 2,000 mg/kg body weight, indicating that the material is no more than slightly toxic by single skin application.

The product was shown to be non-irritating to rabbit skin, but extremely corrosive to rabbit eyes.

EMERGENCY AND FIRST AID PROCEDURES:

<IF SWALLOWED>: Drink large quantities of water. Do not induce vomiting. Get medical attention.

<IF ON SKIN>: Wash skin with plenty of soap and water. Get medical attention if irritation occurs.

<IF IN EYES>: Flush eyes with copious amounts of water for at least 15 minutes while holding eyelids open. Get medical attention if irritation persists.

<IF INHALED>: Remove victim to fresh air.

NOTES TO PHYSICIAN:

Probable mucosal damage may contraindicate the use of gastric lavage. There is no specific antidote for exposure to this material. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

MEDICAL CONDITION AGGRAVATED BY OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggest that overexposure is unlikely to aggravate existing medical conditions.

EXPOSURE CONTROL METHODS	<p>During formulation of this product, the following good industrial hygiene practice is recommended:</p> <p>Provide adequate ventilation at work place. Wear chemical goggles to prevent eye exposure. Wear rubber gloves when handling this material. An apron or impermeable covering should be worn where exposure to the product could occur.</p> <p>Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.</p> <p>For end users, please refer to the product label for personal protective clothing/equipment.</p>
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SPILL OR LEAK PROCEDURES	<p>Wearing appropriate protective clothing and equipment (see "Exposure Control" section), shovel/sweep spilled material into covered containers for proper disposal (see "Waste Disposal" section), or reuse if possible. Rinse spill area and tools several times with soapy water. Contain</p>
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□

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and absorb rinsate with inert absorbents (e.g. granular clay or sawdust), and place into the same disposal container as spilled material.

Depending on the quantity released to the environment, notifications to regulatory authorities may be required

(see "Additional Regulatory Information" section). If spill is to a water body, immediately notify applicable authorities downstream, so that contingencies can be taken, if necessary.

WASTE DISPOSAL: To avoid disposal, all attempts should be made to utilize the product completely in accordance with its registered and/or intended use. If this is not possible, handle with care, and dispose in a safe manner.

Empty containers may retain some product residues. DO NOT REUSE. Triple rinse, render container unusable by crushing and/or puncturing, and dispose in a safe manner.

It is the ultimate responsibility of the waste generator to determine at the time of disposal whether the product (and/or "empty" container residue) meets any hazardous waste criteria. Follow all applicable Federal, State, Provincial, and Local regulations regarding waste management methods.

**SPECIAL
PRECAUTIONS**

HANDLING AND STORAGE:

Do not contaminate water, food or feed by storage or disposal. Store in a secure, dry, well-ventilated separate area; away from children, livestock and food products.

Not for use or storage in or around the home.

Keep away from sources of ignition and protect from exposure to fire and heat.

Segregate from oxidizers and incompatible materials listed in the Reactivity Data Section.

Maintain good housekeeping to control dust accumulations.

Due to the dust explosion hazard, all equipment should have explosion venting per NFPA 68-1978. All electrical wiring and equipment should meet the provisions of NFPA-70.

□

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ADDITIONAL REGULATORY INFORMATION

SARA Title III Data

Section 311 and 312 Hazard Categories

Immediate Health Hazard - Y	Reactive Hazard - N
Delayed Health Hazard - N	Sudden Pressure - N
Fire Hazard - N	Release Hazard

Section 302 Extremely Hazardous Substances - None

Section 313 Toxic Chemicals - None

CERCLA Reportable Quantity

None

APPENDIX

RCRA Hazardous Waste Code(s): None Known

It is the responsibility of the waste generator to determine if any hazardous waste codes apply, prior to disposal.

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.

Last Revision Date: 7/29/91

SOURCE AND	SHEET NO.:	AG07153-2
DATE INFORMATION	DATE:	JUN 02, 1997

02-J

□

Material Safety Data Sheet

Phthalimide, 98%

ACC# 96799

Section 1 - Chemical Product and Company Identification

MSDS Name: Phthalimide, 98%**Catalog Numbers:** AC131100000, AC131100010, AC131101000, AC131105000**Synonyms:** 1H-Isoindole-1,3(2H)-dione**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
85-41-6	PHthalimide	98%	201-603-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: almost white solid.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: None known.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** Not available. None

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid if irritation develops or persists. Flush skin with plenty of soap and water.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Flash Point: 165 deg C (329.00 deg F)

Autoignition Temperature: 500 deg C (932.00 deg F)

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: Not published.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
PHTHALIMIDE	none listed	none listed	none listed

OSHA Vacated PELs: PHTHALIMIDE: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if

exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: almost white
Odor: Weak
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 366 deg C @ 760.00mm Hg
Freezing/Melting Point: 233 - 235 deg C
Decomposition Temperature: Not available.
Solubility: 0.4-0.6 G/L (20°C)
Specific Gravity/Density: Not available.
Molecular Formula: C₈H₅NO₂
Molecular Weight: 147.13

Section 10 - Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: Incompatible materials.
Incompatibilities with Other Materials: Strong oxidizing agents - hypochlorites.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 85-41-6: TI3920000
LD50/LC50:
CAS# 85-41-6:
Oral, mouse: LD50 = 5 gm/kg;

Carcinogenicity:
CAS# 85-41-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: See "The dictionary of substances and their effects" for complete information (editor : M.L.Richardson).
Reproductive Effects: see RTECS
Mutagenicity: Genotoxicity: See "The dictionary of substances and their effects" for complete information (editor : M.L.Richardson).
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.

Environmental: See "The dictionary of substances and their effects" for complete information (editor : M.L.Richardson).

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 85-41-6 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 85-41-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 85-41-6: 1

Canada - DSL/NDSL

CAS# 85-41-6 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #3 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Material Safety Data Sheet

Salicylanilide, 99%

ACC# 90623

Section 1 - Chemical Product and Company Identification

MSDS Name: Salicylanilide, 99%**Catalog Numbers:** AC157730000, AC157731000, AC157732500, AC157735000**Synonyms:** 2-Hydroxy-N-phenylbenzamide**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
87-17-2	SALICYLANILIDE	99	201-727-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: slightly brown solid.

Caution! Causes eye and skin irritation. Causes digestive and respiratory tract irritation. The toxicological properties of this material have not been fully investigated.**Target Organs:** None.**Potential Health Effects****Eye:** Causes eye irritation.**Skin:** Causes skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** Causes respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything

by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: Not published.

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use only in a well-ventilated area. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.

Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
SALICYLANILIDE	none listed	none listed	none listed

OSHA Vacated PELs: SALICYLANILIDE: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: slightly brown
Odor: Odorless
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: 136 - 138 deg C
Decomposition Temperature: Not available.
Solubility: slightly soluble in water
Specific Gravity/Density: Not available.
Molecular Formula: C₁₃H₁₁NO₂
Molecular Weight: 213.24

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials.
Incompatibilities with Other Materials: Strong oxidizing agents, strong bases, strong acids.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 87-17-2: VN7850000
LD50/LC50:
CAS# 87-17-2:
Oral, mouse: LD50 = 2400 mg/kg;

Carcinogenicity:
CAS# 87-17-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: No data available.
Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 87-17-2 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 87-17-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XI

Risk Phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 87-17-2: No information available.

Canada - DSL/NDSL

CAS# 87-17-2 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #3 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

MSDS Number: S5570 * * * * Effective Date: 08/10/04 * * * * Supersedes: 11/02/01



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-8666

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

Sorbic Acid

1. Product Identification

Synonyms: 2,4-Hexadienoic Acid

CAS No.: 110-44-1

Molecular Weight: 112.13

Chemical Formula: C₆H₈O₂

Product Codes: V040

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sorbic Acid	110-44-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

CAUTION! CAUSES IRRITATION.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 0 - None
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

None identified.

Ingestion:

None identified.

Skin Contact:

Irritation.

Eye Contact:

Irritation.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Prompt action is essential.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

In case of contact, flush skin with water.

Eye Contact:

In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

5. Fire Fighting Measures

Fire:

Flash point: 127C (261F) CC

Explosion:

None identified.

Fire Extinguishing Media:

Use extinguishing media appropriate for surrounding fire.

Special Information:

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

6. Accidental Release Measures

Wear self-contained breathing apparatus and full protective clothing. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

7. Handling and Storage

Do not store near oxidizing materials. Keep container tightly closed. Store in a cool, dry, well-ventilated area. Store in light-resistant containers. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the substance is apparent and engineering controls are not feasible, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystalline powder.

Odor:

No information found.

Solubility:

Slight (0.1-1%)

Specific Gravity:

No information found.

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

228C (442F)

Melting Point:

134C (273F)

Vapor Density (Air=1):

3.87

Vapor Pressure (mm Hg):

0 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizing agents.

Conditions to Avoid:

Heat, Light.

11. Toxicological Information

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sorbic Acid (110-44-1)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC    Japan  Australia
-----
Sorbic Acid (110-44-1)                   Yes   Yes   Yes    Yes

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```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                               Korea  DSL   NDSL   Phil.
-----
Sorbic Acid (110-44-1)                   Yes   Yes   No     Yes

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -SARA 313-
RQ    TPQ    List  Chemical Catg.
-----
Sorbic Acid (110-44-1)                   No    No    No     No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               CERCLA  -RCRA-  -TSCA-
261.33  8(d)
-----
Sorbic Acid (110-44-1)                   No     No     No

```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

Label Hazard Warning:

CAUTION! CAUSES IRRITATION.

Label Precautions:

Avoid contact with eyes, skin, clothing; cloth, paper and other absorbent material saturated with this product may ignite spontaneously.

Keep in tightly closed container. Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
 Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: Z4275 * * * * * Effective Date: 12/10/04 * * * * * Supercedes: 05/14/03

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-850-2151
CHEMTREC: 1-800-424-9300

National Response In Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ZINC STEARATE

1. Product Identification

Synonyms: Dibasic zinc stearate; stearic acid zinc salt; octadecanoic acid zinc salt, zinc distearate.

CAS No.: 557-05-1

Molecular Weight: 632.2

Chemical Formula: Zn(C₁₈H₃₅O₂)₂

Product Codes:

J.T. Baker: 4375

Mallinckrodt: 0855, 2230, 2287, 2300, 3895, 4185, 4341, 4644, 4679, 5409, 5770, 5895, 5897, 5903, 5905, 5925, 5926, 5940, 5966, 5972, 6822, 7458, 7464, 8427, 8512, 8565, 8587, 8858

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Zinc Stearate	557-05-1	90 - 100%	Yes
The exact product composition depends on the source and purity of the fatty acid used.			

3. Hazards Identification

Emergency Overview

WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 2 - Moderate

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:

Symptoms from excessive inhalation of dust may include coughing and difficult breathing.

Ingestion:

Large dose may cause abdominal spasms and diarrhea.

Skin Contact:

May cause skin irritation. Constant exposure to excessive amounts may cause eczema.

Eye Contact:

May cause redness, pain.

Chronic Exposure:

Grossly excessive and chronic inhalation of the dust may cause a progressive chemical pneumonitis, cyanosis, and pulmonary edema.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, impaired respiratory function, or a history of pulmonary disease should not be exposed to dusts.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

Flash point: 279C (534F) OC

Autoignition temperature: 790C (1454F)

Minimum dust cloud ignition temperature is 690C (1274F). Contact with strong oxidizers may cause fire.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosible concentration: 0.02 g/l (air) (Bureau of Mines, 1968). Maximum explosion pressure: 68 lb./sq. in. @ 0.3 ounces per cubic foot. Sensitive to static discharge.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water or foam may cause frothing.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. **Pressure from the extinguishing media may cause severe dusting.** Melted fatty acid can give "grease" type fire. **Explosion hazards apply only to dusts, not to granular forms of this product.** Actual temperatures and concentrations may vary by product composition.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: **Clean up spills in a manner that does not disperse dust into the air.** Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

15 mg/m³ total dust, 5 mg/m³ respirable fraction for zinc stearate

-ACGIH Threshold Limit Value (TLV):

10 mg/m³ total dust for stearates (does not include stearates of toxic metals) A4 - Not classifiable as a Human Carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Gloves and lab coat, apron or coveralls.

Eye Protection:

Use chemical safety goggles.

9. Physical and Chemical Properties

Appearance:

Fine, soft white powder, granules, prills or flakes.

Odor:

Slight odor of fatty acid.

Solubility:

Insoluble in water, alcohol, ether; slightly soluble in benzene.

Density:

1.095

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

Decomposes.

Melting Point:

120 - 130C (248 - 266F)

Vapor Density (Air=1):

Not applicable.

Vapor Pressure (mm Hg):

Not applicable.

Evaporation Rate (BuAc=1):

Not applicable.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Burning may produce carbon monoxide, carbon dioxide, and zinc oxides.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers, strong alkalis, peroxides, oxygen, and acids.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

LD50 oral, rat = > 10 gm/Kg.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Zinc Stearate (557-05-1)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA   EC    Japan  Australia
-----
Zinc Stearate (557-05-1)                       Yes   Yes   Yes    Yes
  
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-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Zinc Stearate (557-05-1)                       Yes   Yes   No     Yes
  
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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ      TPQ      List   Chemical Catg.
-----
Zinc Stearate (557-05-1)                       No     No     No     Zinc compoun
  
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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
261.33  8(d)
-----
Zinc Stearate (557-05-1)                       No      No      No
  
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: No Chronic: No Fire: Yes Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

Label Precautions:

Store in a tightly closed container.

Avoid dust cloud in presence of an ignition source.

Maintain adequate ventilation.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 3.

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Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

EASTMAN KODAK COMPANY -- X480,ANTHRACENE -- 6810-00K000805

===== Product Identification =====

Product ID:X480,ANTHRACENE

MSDS Date:01/01/1985

FSC:6810

NIIN:00K000805

MSDS Number: BCBLY

=== Responsible Party ===

Company Name:EASTMAN KODAK COMPANY

Emergency Phone Num:716-722-0271

CAGE:19139

=== Contractor Identification ===

Company Name:EASTMAN KODAK CO GOVERNMENT MARKETS CONTRACTS

Address:343 STATE ST

Box:City:ROCHESTER

State:NY

ZIP:14650-1115

Country:US

Phone:716-722-5151/(800) 242-2424

CAGE:19139

===== Composition/Information on Ingredients =====

Ingred Name:ANTHRACENE (SARA III)

CAS:120-12-7

RTECS #:CA9350000

Fraction by Wt: 100%

OSHA PEL:0.2 MG/M3

EPA Rpt Qty:5000 LBS

DOT Rpt Qty:5000 LBS

===== Hazards Identification =====

Effects of Overexposure:MAY BE IRRITATING ON DIRECT CONTACT W/SKIN OR EYES.

===== First Aid Measures =====

First Aid:IN CASE OF SKIN OR EYE CONTACT,FLUSH IMMEDIATELY W PLENTY OF WATER FOR AT LEAST 15 MINUTES;FOR EYES,GET MED ATTENTION.

===== Fire Fighting Measures =====

Flash Point:250F CC

Lower Limits:0.6%

Upper Limits:UNK

Extinguishing Media:CO*2,DRY CHEM

Fire Fighting Procedures:NONE KNOWN

Unusual Fire/Explosion Hazard:NONE KNOWN

===== Accidental Release Measures =====

Spill Release Procedures:REMOVE ALL SOURCES OF IGNITION.WEARING SUITABLE PROTECTV EQUIP SWEEP MATL ONTO PAPER.PLACE IN FIBER CARTON.INCINERATE.WASH SPILL AREA WELL W/SOAP & WATER.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP IN TIGHTLY CLOSED CONTAINERS AWAY
FROM SOURCE OF HEAT.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:AN APPRVD DUST RESPIRATOR
Ventilation:LOCAL EXHAUST:FOR DUST CONTROL;MECH(GEN);GOOD GEN.VENT.
Protective Gloves:RESISTANT
Eye Protection:SAFETY GLASSES
Supplemental Safety and Health
PRODUCT SUBLIMES AT 342C.

=====
===== Physical/Chemical Properties =====

HCC:N1
Boiling Pt:B.P. Text:SEE SUPDATA
Vapor Pres:1.0
Vapor Density:6.15
Spec Gravity:1.25
Solubility in Water:INSOLUBLE
Appearance and Odor:WHITE TO PALE YELLOW CRYSTAL
Percent Volatiles by Volume:UNK

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
Hazardous Decomposition Products:NONE KNOWN

=====
===== Disposal Considerations =====

Waste Disposal Methods:MAKE UP SMALL PACKAGES IN PAPER OR OTHER
FLAMMABLE MATLS.BURN IN INCINERATOR.OBSERVE ALL FEDERAL,STATE &
LOCAL LAWS WHICH TAKE PRECEDENCE.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Azodicarbonamide, 97%

ACC# 86874

Section 1 - Chemical Product and Company Identification

MSDS Name: Azodicarbonamide, 97%**Catalog Numbers:** AC105160000, AC105160050, AC105165000**Synonyms:** 1,1'-Azobisformamide.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
123-77-3	Azodicarbonamide	97	204-650-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: yellow-orange crystalline powder.

Warning! Risk of explosion if heated under confinement. May cause allergic respiratory reaction.**Target Organs:** Respiratory system.**Potential Health Effects****Eye:** Dust may cause mechanical irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause allergic respiratory reaction.**Chronic:** Repeated exposure may cause allergic respiratory reaction (asthma).

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. May be ignited by heat, sparks, and flame. ~~Vapors or dust may form explosive mixture with air.~~ May burn violently. Decomposition may be self-accelerated and produce large amounts of gas. Self-decomposition or self-ignition may be triggered by heat, chemical reaction, friction or impact.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or regular foam. Cool containers with flooding quantities of water until well after fire is out. For large fires, flood fire area with water from a distance.

Flash Point: 225 deg C (437.00 deg F)

Autoignition Temperature: Not available.

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. **Minimize dust generation and accumulation.** Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Do not breathe dust.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Azodicarbonamide	none listed	none listed	none listed

OSHA Vacated PELs: Azodicarbonamide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Appearance: yellow-orange

Odor: None reported.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 225 deg C (dec)

Decomposition Temperature: 225 deg C

Solubility: Soluble in hot water.

Specific Gravity/Density: Not available.

Molecular Formula: C₂H₄N₄O₂

Molecular Weight: 116.08

Section 10 - Stability and Reactivity

Chemical Stability: Risk of explosion if heated under confinement.

Conditions to Avoid: Dust generation, excess heat, heating in a confined space.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, ammonia and/or derivatives.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 123-77-3: LQ1040000

LD50/LC50:

CAS# 123-77-3:

Oral, rat: LD50 = >6400 mg/kg;

Skin, rat: LD50 = >500 mg/kg;

Carcinogenicity:

CAS# 123-77-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: No information available.
Physical: Hydrolyzes at high temperatures to nitrogen, carbon dioxide and ammonia.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	AZODICARBONAMIDE	Azodicarbonamide
Hazard Class:	4.1	4.1
UN Number:	UN3242	UN3242
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 123-77-3 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 123-77-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XN

Risk Phrases:

R 42 May cause sensitization by inhalation.

R 44 Risk of explosion if heated under confinement.

Safety Phrases:

S 22 Do not breathe dust.

S 24 Avoid contact with skin.

S 37 Wear suitable gloves.

WGK (Water Danger/Protection)

CAS# 123-77-3: 1

Canada - DSL/NDSL

CAS# 123-77-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B4, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 10/29/1998

Revision #3 Date: 2/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the

possibility of such damages.

SIGMA CHEMICAL COMPANY -- B3501 BETAINE HYDROCHLORIDE -- 6550-00F054176

===== Product Identification =====

Product ID:B3501 BETAINE HYDROCHLORIDE
 MSDS Date:05/19/1997
 FSC:6550
 NIIN:00F054176
 MSDS Number: CFGQV
 === Responsible Party ===
 Company Name:SIGMA CHEMICAL COMPANY
 Address:3050 SPRUCE ST
 Box:14508
 City:SAINT LOUIS
 State:MO
 ZIP:63178-5000
 Country:US
 Info Phone Num:314-771-5765/800-325-3010
 Emergency Phone Num:314-771-5765/800-325-3010
 CAGE:21076

=== Contractor Identification ===
 Company Name:SIGMA CHEMICAL COMPANY
 Address:3050 SPRUCE ST
 Box:14508
 City:ST LOUIS
 State:MO
 ZIP:63178
 Country:US
 Phone:314-771-5765
 CAGE:21076

===== Composition/Information on Ingredients =====

Ingred Name:AMMONIUM, (CARBOXYMETHYL)TRIMETHYL-, CHLORIDE
 CAS:590-46-5
 RTECS #:BP3136000

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:MAY BE HARMFUL BY INHALATION,
 INGESTION/SKIN ABSORPTION.MAY CAUSE EYE & SKIN IRRITATION. MAY BE
 IRRITATING TO MUCOUS MEMBRANES & UPPER RESPIRATORY TRACT.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:IRRITATION

===== First Aid Measures =====

First Aid:EYES/SKIN: FLUSH W/COPIOUS AMOUNTS OF WATER FOR 15 MINS.
 INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE CPR. IF
 BREATHING IS DIFFICULT GIVE OXYGEN. INGESTION: IF CONSCIOUS WASH
 OUT MOUTH W/WAT ER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CO2, DRY CHEMICAL POWDER/APPROPRIATE
 FOAM
 Fire Fighting Procedures:WEAR SCBA & FULL PROTECTIVE GEAR TO PREVENT

CONTACT W/SKIN & EYES.

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR FULL PROTECTIVE GEAR. SWEEP UP & PLACE IN A BAG & HOLD FOR DISPOSAL. ~~AVOID RAISING DUST.~~ VENTILATE AREA & WASH SITE AFTER PICKUP.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR
Ventilation:MECHANICAL EXHAUST REQUIRED
Protective Gloves:COMPATIBLE CHEMICAL RESISTANT
Eye Protection:CHEMICAL SAFETY GOGGLES
Work Hygienic Practices:REMOVE/LAUNDER CONTAMIANATED CLOTHING BEFORE REUSE. WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:465-467.6F
Appearance and Odor:WHITE CRYSTALLINE POWDER

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS
Hazardous Decomposition Products:TOXIC FUMES OF: CO, CO2, NITROGEN OXIDES, HYDROGEN CHLORIDE GAS.

===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE/MIX W/COMBUSTIBLE SOLVENT & BURN IN CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER. DISPOSE OF IAW/FEDERAL, STATE & LOCAL REGULATIONS.

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Material Safety Data Sheet

Betaine monohydrate, 99%

ACC# 64153

Section 1 - Chemical Product and Company Identification

MSDS Name: Betaine monohydrate, 99%

Catalog Numbers: AC204290000, AC204290050, AC204291000

Synonyms: (Carboxymethyl)trimethylammonium hydroxide; Trimethylglycine hydroxide

Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
590-47-6	Betaine monohydrate	99	209-684-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystalline powder.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: None.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.

Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything

by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Betaine monohydrate	none listed	none listed	none listed

OSHA Vacated PELs: Betaine monohydrate: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Appearance: white

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: Not available.

Decomposition Temperature: 310 deg C

Solubility: soluble

Specific Gravity/Density: Not available.

Molecular Formula: C₅H₁₃NO₃

Molecular Weight: 135.16

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation, strong oxidants.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 590-47-6 unlisted.

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 590-47-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 590-47-6 is not listed on the TSCA inventory. It is for research and development use only.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 590-47-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 590-47-6: No information available.

Canada - DSL/NDSL

None of the chemicals in this product are listed on the DSL or NDSL list.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
--

MSDS Creation Date: 2/17/1999

Revision #3 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

WORTHINGTON BIOCHEMICAL CORP -- A-CASEIN -- 6550-00F042783

=====
 ===== Product Identification =====

Product ID:A-CASEIN
 MSDS Date:06/01/1994
 FSC:6550
 NIIN:00F042783
 MSDS Number: CFBRL
 === Responsible Party ===
 Company Name:WORTHINGTON BIOCHEMICAL CORP
 Address:HALLS MILL RD
 City:FREEHOLD
 State:NJ
 ZIP:07728-5000
 Country:US
 Info Phone Num:908-462-3838
 Emergency Phone Num:908-462-3838
 CAGE:GO448

=====
 ===== Contractor Identification =====
 Company Name:WORTHINGTON BIOCHEMICAL CORP
 Address:HALLS MILL RD
 City:FREEHOLD
 State:NJ
 ZIP:07728-5000
 Country:US
 Phone:908-462-3838
 CAGE:GO448

=====
 ===== Composition/Information on Ingredients =====

Ingred Name:CASEIN
 CAS:9000-71-9

=====
 ===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:MAY CAUSE SKIN, EYE/RESPIRATORY TRACT
 IRRITATION UPON CONTACT. ALLERGIC REACTIONS IN CERTAIN SENSITIVE
 INDIVIDUALS MAY DEVELOP.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:IRRITATION, ALLERGIC REACTIONS.
 Medical Cond Aggravated by Exposure:ALLERGIES, ASTHMA.

=====
 ===== First Aid Measures =====

First Aid:INHALATION: REMOVE TO FRESH AIR. EYES/SKIN: WASH THOROUGHLY
 W/WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

=====
 ===== Fire Fighting Measures =====

Fire Fighting Procedures:NONE
 Unusual Fire/Explosion Hazard:NONE

=====
 ===== Accidental Release Measures =====

Spill Release Procedures:AVOID PHYSICAL CONTACT & DUST DURING REMOVAL.
 USE NORMAL CLEAN-UP PROCEDURES & WASH THOROUGHLY W/WATER.

=====
Handling and Storage
=====

Handling and Storage Precautions:NONE

Other Precautions:NONE

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:WEAR DUST MASK.

Ventilation:LOCAL EXHAUST: AS REQUIRED. MECHANICAL (GENERAL): VENT FAN.

Protective Gloves:RECOMMENDED

Eye Protection:RECOMMENDED

Supplemental Safety and Health

SOLUBILITY IN WATER: POWDERS-APPRECIABLE. LIQUIDS-MISCIBLE.

=====
Physical/Chemical Properties
=====

Solubility in Water:(SEE SUPP)

Appearance and Odor:POWDERS- WHITE TO TAN. LIQUIDS-WHITE TO BROWN. BOTH
HAVE TYPICAL ENZYME ODOR.=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES

=====
Disposal Considerations
=====Waste Disposal Methods:FLUSH IN SEWERAGE SYSTEM W/WATER IAW/FEDERAL,
STATE & LOCAL REGULATIONS.

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of Defense. The United States of America in no manner whatsoever,
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assume responsibility for the suitability of this information to their
particular situation.

CHEM SERVICE INC -- 2-CHLOROACETAMIDE, O-258 -- 6810-00N066202

===== Product Identification =====

Product ID:2-CHLOROACETAMIDE, O-258

MSDS Date:09/01/1988

FSC:6810

NIIN:00N066202

MSDS Number: CBDJP

=== Responsible Party ===

Company Name:CHEM SERVICE INC

Box:3108

City:WEST CHESTER

State:PA

ZIP:19381

Country:US

Info Phone Num:215-692-3026

Emergency Phone Num:215-692-3026

CAGE:84898

=== Contractor Identification ===

Company Name:CHEM SERVICE INC

Box:3108

City:WEST CHESTER

State:PA

ZIP:19381

Country:US

Phone:215-692-3026

CAGE:84898

Company Name:CHEM SERVICE, INC

Address:660 TOWER LN

Box:599

City:WEST CHESTER

State:PA

ZIP:19301-9650

Country:US

Phone:610-692-3026

CAGE:8Y898

===== Composition/Information on Ingredients =====

Ingred Name:ACETAMIDE, 2-CHLORO-; (2-CHLOROACETAMIDE)

CAS:79-07-2

RTECS #:AB5075000

OSHA PEL:N/K

ACGIH TLV:N/K

Ingred Name:EYE PROT: & FULL LENGTH FACE SHIELD .

RTECS #:9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture:LD50: (ORAL, RAT) 70 MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:CAN BE HARMFUL IF SWALLOWED. CAN BE

HARMFUL IF INHALED. CAN BE HARMFUL IF ABSORBED THROUGH THE SKIN.

VAPORS AND/OR DIRECT EYE CONTACT AND CAUSE SEVERE EYE BURNS. CAN

CAUSE SEVERE SKIN BURNS. EXTREMELY DESTRUCTIVE OF MUCOUS MEMBRANES

AND/ORUPPER RESPIRATORY TRACT.

Explanation of Carcinogenicity:NOT RELEVANT.
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:ANTIDOTE IS A SUBSTANCE INTENDED TO COUNTERACT EFT OF A
 POISON. IT SHOULD BE ADMIN ONLY BY MD/TRAINED EMER PERS. MED ADVICE
 CAN BE OBTAINED FROM POIS CTL CTR. IN CASE OF CONT:EYES:FLUSH
 CONTINUOUSLY W /H*20 FOR AT LEAST 15-20 MIN. SKIN:FLUSH W/H*20 FOR
 15-20 MIN. IF NO BURNS HAVE OCCURRED-USE SOAP & H*20 TO CLEANSE
 SKIN. INHAL:REMOVE PATIENT TO FRESH AIR. ADMIN OXYGEN IF PATIENT IS
 HAVING (SUPDAT)

===== Fire Fighting Measures =====

Flash Point:NOT AVAILABLE
 Extinguishing Media:CARBON DIOXIDE, DRY CHEMICAL POWDER OR WATER SPRAY.
 Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE
 EQUIPMENT .
 Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures:EVACUATE AREA. WEAR APPROPRIATE OSHA
 NIOSH/MSHA-REGULATED EQUIPMENT. VENTILATE AREA. SWEEP UP AND PLACE
 IN AN APPROPRIATE CONTAINER. HOLD FOR DISPOSAL. WASH CONTAMINATED
 SURFACES TO REMOVE ANY RESIDUE S.
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID CONTACT WITH SKIN, EYES AND
 CLOTHING. KEEP TIGHTLY CLOSED AND STORE IN A COOL DRY PLACE. STORE
 ONLY WITH COMPATIBLE CHEMICALS.
 Other Precautions:CONTACT LENSES SHOULD NOT BE WORN IN THE LABORTORY.
 ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS - AVOID DIRECT
 PHYSICAL CONTACT! PRODUCT IS FURNISHED FOR LABORATORY USE ONLY!
 PRODUCTS MAY NOT BE USED AS DRUGS, COSMETICS, (SUPDAT)

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE APPROPRIATE OSHA NIOSH/MSHA APPROVED SAFETY
 EQUIPMENT.
 Ventilation:THIS CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
 Protective Gloves:IMPERVIOUS GLOVES .
 Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS (ING 2)
 Other Protective Equipment:EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET
 ANSI DESIGN CRITERIA .
 Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
 Supplemental Safety and Health
 FIRST AID PROC:DFCLT BRTHG. IF PATIENT HAS STOPPED BRTHG ADMINISTER
 ARTIF RESPS. IF PATIENT IS IN CARDIAC ARREST ADMINISTER CPR.
 CONTINUE LIFE SUPPORTING MEASURES UNTIL MED ASSISTANCE HAS ARRIVED.
 REM OVE AND WASH CONTAMD CLTHG. GET MED ATTN IF NEC.
 OTHER:AGRICULTURAL/PESTICIDAL PRODS, FOOD ADDITIVES/AS HOUSEHOLD
 CHEMS.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:437F,225C
Melt/Freeze Pt:M.P/F.P Text:>246F,>119C
Solubility in Water:VERY SLIGHTLY SOL
Appearance and Odor:WHITE CRYSTALLINE SOLID.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:NO
INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG REDUCING AGENTS,
STRONG ACIDS, STRONG BASES.
Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:DECOMPOSITION LIBERATES TOXIC FUMES.
DECOMPOSITION PRODUCTS ARE CORROSIVE.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE WITH FEDERAL,
STATE AND LOCAL REGULATIONS . BURN IN A CHEMICAL INCINERATOR
EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Dicyandiamide, 99.5%

ACC# 95230

Section 1 - Chemical Product and Company Identification

MSDS Name: Dicyandiamide, 99.5%

Catalog Numbers: AC113810000, AC113810010, AC113810025, AC113810050, AC113815000

Synonyms: Cyanoguanidine; Dicyanodiamide; 1-Cyanoguanidine; N-Cyanoguanidine; Dicyandiamide; Dicyandiamin

Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
461-58-5	Dicyandiamide	99.5%	207-312-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white powder.

Caution! Harmful. Methemoglobin former - can cause cyanosis. May be harmful if swallowed. May cause irritation. May cause cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood).

Target Organs: Blood.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. Long-term exposure may cause eczema.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed. May form methemoglobin which in sufficient concentration causes cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood).

Inhalation: May cause respiratory tract irritation. May cause irritation of the mucous membranes.

Chronic: Absorption into the body leads to the formation of methemoglobin which in sufficient concentrations causes cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood). Prolonged or repeated contact may cause possible eczema. Effects may be delayed 2-4 hours or longer.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. ~~Dust can be an explosion hazard when exposed to heat or flame.~~

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Sweep up, then place into a suitable container for disposal. ~~Avoid generating dusty conditions.~~ Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

Storage: Keep container closed when not in use. Store in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
---------------	-------	-------	-------------------

Dicyandiamide

none listed

none listed

none listed

OSHA Vacated PELs: Dicyandiamide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: white

Odor: no odor

pH: Not available.

Vapor Pressure: Negligible.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 208.00 - 211.00 deg C

Decomposition Temperature: Not available.

Solubility: 2.26% @ 13 °C

Specific Gravity/Density: 1.400

Molecular Formula: C₂H₄N₄

Molecular Weight: 84.08

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, strong oxidants, mixture with ammonium nitrate, potassium chlorate and related compounds are powerful explosives..

Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, strong bases, ammonium nitrate, potassium chlorates.

Hazardous Decomposition Products: Hydrogen cyanide, nitrogen oxides, carbon monoxide, carbon dioxide, cyanide fumes, ammonia.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 461-58-5: ME9950000

LD50/LC50:

CAS# 461-58-5:

Oral, mouse: LD50 = >10 gm/kg;

Carcinogenicity:

CAS# 461-58-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found

Teratogenicity: No information found

Reproductive Effects: No information found

Mutagenicity: No information found

Neurotoxicity: No information found

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.

Environmental: May have high mobility in soil, biodegradation in soil may be an important process. Volatilization is not expected to be important from moist soil surfaces. In water, should not adsorb to suspended solids and sediment, not expected to volatilize from surface.

Bioconcentration in aquatic organisms is low; biodegradation may occur under both aerobic and anaerobic conditions. Will exist solely as a vapor in the ambient atmosphere. Degraded by reaction with photochemically produced hydroxyl radicals.

Physical: Degradation in air: half-life (estimated) = 9 hours.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 461-58-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 461-58-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XN

Risk Phrases:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 461-58-5: 1

Canada - DSL/NDSL

CAS# 461-58-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 7/26/1999

Revision #4 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

VANCHEM,INC. -- ETHYL CENTRALITE;DIETHYLDIPHENYL UREA -- 6810-01-226-7169

===== Product Identification =====

Product ID:ETHYL CENTRALITE;DIETHYLDIPHENYL UREA

MSDS Date:06/26/1987

FSC:6810

NIIN:01-226-7169

MSDS Number: BGQXV

=== Responsible Party ===

Company Name:VANCHEM, INC.

Address:1 N.TRANSIT ROAD

City:LOCKPORT

State:NY

ZIP:14094

Country:US

Info Phone Num:716-434-2624

Emergency Phone Num:716-434-2624

Preparer's Name:MATTHEW BARMASSE

CAGE:NO246

=== Contractor Identification ===

Company Name:VAN DE MARK CHEMICAL CO INC

Address:1 N TRANSIT RD

Box:City:LOCKPORT

State:NY

ZIP:14094-2323

Country:US

CAGE:6X504

Company Name:VANCHEM, INC.

Address:1 N.TRANSIT ROAD

City:LOCKPORT

State:NY

ZIP:14094

Country:US

Phone:716-434-2624

CAGE:NO246

===== Composition/Information on Ingredients =====

Ingrid Name:ETHYL CENTRALITE,DIETHYLDIPHENYL UREA

ORN,N-DIETHYLCARBANILIDE

CAS:85-98-3

RTECS #:FE0350000

Fraction by Wt: >99.0%

===== Hazards Identification =====

LD50 LC50 Mixture:IPR/MOUSE LD50:200MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE:IRRITATION OF THROAT,NASAL

PASSAGE,COUGHING AND SCRATCHY THROAT,REDNESS AND TEARING OF

EYES;INGESTION MAY CAUSE NAUSEA,VOMITING & HEADACHES. CHRONIC:NOT

KNOWN OR NO DATA AVAILABLE.

Explanation of Carcinogenicity:N/K (PER MSDS)

Effects of Overexposure:SHARP NEEDLE-LIKE CRYSTALS CAN CAUSE IRRITATION

TO SENSITIVE SKIN AND EYES OR RESPIRATORY OR G.I. TRACTS.

Medical Cond Aggravated by Exposure:NOT KNOWN

=====
First Aid Measures
=====

First Aid:INHALE:REMOVE TO FRESH AIR, GIVE CPR/O*2 IF
NEED;EYES/SKIN:FLUSH W LG AMTS H*2O FOR 15 MIN;INGEST:RINSE MOUTH;
GET MEDICAL ATTENTION FOR EYES, BREATHING DIFFICULTY, OR OTHER
SYMPTOMS OF OVEREXPOSURE.

=====
Fire Fighting Measures
=====

Flash Point Method:CC
Flash Point:302F/150C
Extinguishing Media:AS APPROPRIATE FOR CLASS B FIRES.
Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA IN CONFINED AREA.
Unusual Fire/Explosion Hazard:WHEN HEATED TO DECOMPOSITION,TOXIC FUMES
ARE EMITTED.POWDER WILL BURN IN OPEN FLAME.

=====
Accidental Release Measures
=====

Spill Release Procedures:USE PROPER PERSONAL PROTECTION;SHOVEL INTO
DRUMS FOR PROPER DISPOSAL.

=====
Handling and Storage
=====

Handling and Storage Precautions:STORE IN COOL,DRY AND WELL VENTILATED
AREA.DO NOT STORE NEAR STRONG OXIDIZING AGENTS.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:USE NIOSH/MSHA APPROVED RESPIRATOR FOR ORGANIC
DUST/VAPORS/MIST(HIGH EFFICIENCY DUST FILTER) OR SCBA IN AN
ENCLOSED AREA.
Ventilation:PROVIDE MECHAN(GEN/LOCAL EXHAUST)VENT TO MAINTN <TLV
Protective Gloves:NEOPRENE
Eye Protection:GOGGLES/FACE SHIELD
Other Protective Equipment:FULL PROTECTIVE CLOTHING,EYE-WASH
FACILITIES,SAFETY SHOWER.
Work Hygienic Practices:AVOID CONTACT WITH EYES AND SKIN;DO NOT BREATHE
DUST.DO NOT EAT,DRINK OR SMOKE IN WORK AREA.
Supplemental Safety and Health

=====
Physical/Chemical Properties
=====

HCC:N1
Boiling Pt:B.P. Text:619F/326C
Vapor Density:9.3
Spec Gravity:1.12
Solubility in Water:NEGLIGIBLE
Appearance and Odor:WHITE LUMP,POWDER OR FLAKES WITH SLIGHT ANILINE
ODOR.
Percent Volatiles by Volume:0.1

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:EXTREME HEAT,HIGH TEMPERATURE.
Hazardous Decomposition Products:DETAILS NOT KNOWN (TOXIC FUMES)

=====
Disposal Considerations
=====

Waste Disposal Methods:DISPOSE OF COLLECTED MATERIAL IN ACCORDANCE WITH
LOCAL, STATE AND FEDERAL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies):
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assume responsibility for the suitability of this information to their
particular situation.

ALDRICH CHEMICAL CO INC -- FERROCENE, 98%, F40-8 -- 6810-00N055823

===== Product Identification =====

Product ID:FERROCENE, 98%, F40-8
 MSDS Date:01/24/1994
 FSC:6810
 NIIN:00N055823
 MSDS Number: BWCQK
 === Responsible Party ===
 Company Name:ALDRICH CHEMICAL CO INC
 Box:355
 City:MILWAUKEE
 State:WI
 ZIP:53201
 Country:US
 Info Phone Num:414-273-3850
 Emergency Phone Num:414-273-3850
 CAGE:60928

===== Contractor Identification =====

Company Name:ALDRICH CHEMICAL CO INC
 Address:1001 WEST ST PAUL AVE
 Box:355
 City:MILWAUKEE
 State:WI
 ZIP:53233
 Country:US
 Phone:414-273-3850
 CAGE:60928

===== Composition/Information on Ingredients =====

Ingred Name:FERROCENE; (DICYCLOPENTADIENYL IRON) (FERROCENE, 98%)
 CAS:102-54-5
 RTECS #:LK0700000
 OSHA PEL:15 MG/M3 TDUST
 ACGIH TLV:10 MG/M3

===== Hazards Identification =====

LD50 LC50 Mixture:LD50: (ORAL, RAT) 1320 MG/KG
 Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE EFFECTS: HARMFUL IF SWALLOWED.
 MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. MAY CAUSE IRRITATION.
 CHRONIC EFFECTS: DAMAGE TO THE LIVER. THE BEST OF MANUFACTURER'S
 KNOWLEDGE, THE CHEMICAL, PHYSICAL & TOXICOLOGICAL PROPERTIES HAVE
 NOT BEEN THOROUGHLY INVESTIGATED.
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:EYES: IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER
 FOR AT LEAST 15 MINUTES. SKIN: IMMEDIATELY WASH SKIN WITH SOAP &
 COPIOUS AMOUNTS OF WATER. INHAL: REMOVE TO FRESH AIR. IF NOT
 BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING ISDIFFICULT,
 GIVE OXYGEN. INGEST: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS

CONSCIOUS. CALL MD. WASH CONTAMINATED CLOTHING BEFORE REUSE.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR NIOSH/MSHA APPRVD SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS & HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG & HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:HARMFUL SOLID. KEEP TIGHTLY CLOSED. HEAT-SENSITIVE. STORE IN A COOL, DRY PLACE.

Other Precautions:HARMFUL IF SWALLOWED. AVOID INHALATION. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. AVOID PROLONGED OR REPEATED EXPOSURE.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST REQUIRED.

Protective Gloves:RUBBER GLOVES.

Eye Protection:ANSI APPRVD CHEM WORKER GOGGLES .

Other Protective Equipment:WEAR SUITABLE PROTECTIVE CLOTHING. EMERG EYE WASH AND DELUGE SHOWER WHICH MEETS ANSI DESIGN CRITERIA .

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:480F,249C

Melt/Freeze Pt:M.P/F.P Text:>345F,>174C

Vapor Pres:0.03 @ 40C

Appearance and Odor:BURNT-ORANGE CRYSTALS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:SENSITIVE TO HEAT.

Hazardous Decomposition Products:TOXIC FUMES OF CARBON MONOXIDE, CARBON DIOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

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AGRICULTURAL MINERALS CORPORATION -- UREA -- 6810-00-782-6521

===== Product Identification =====

Product ID:UREA
 MSDS Date:04/01/1989
 FSC:6810
 NIIN:00-782-6521
 MSDS Number: BJQWF
 === Responsible Party ===
 Company Name:AGRICULTURAL MINERALS CORPORATION
 Box:61830
 City:NEW ORLEANS
 State:LA
 ZIP:70161-1830
 Country:US
 Info Phone Num:918-660-6245
 Emergency Phone Num:918-660-6245 /CHEMTREC 800-424-9300
 CAGE:LO975

===== Contractor Identification =====

Company Name:AGRICULTURAL MINERALS CORPORATION
 Box:61830
 City:NEW ORLEANS
 State:LA
 ZIP:70161-1830
 Country:US
 Phone:918-660-6245
 CAGE:LO975
 Company Name:AMC AGRICULTURAL MINERALS CORPORATION
 Country:US
 CAGE:AMC00
 Company Name:LARIMORE CROP SUPPLY INC
 Address:1102 HENDERSON ST
 Box:City:BLYTHEVILLE
 State:AR
 ZIP:72315-5227
 Country:US
 CAGE:3J301

===== Composition/Information on Ingredients =====

Ingred Name:UREA
 CAS:57-13-6
 RTECS #:YR6250000
 Fraction by Wt: 97-99%
 Other REC Limits:NONE SPECIFIED

Ingred Name:BIURET
 Fraction by Wt: 0.5-2.0%
 Other REC Limits:NONE SPECIFIED

Ingred Name:WATER
 CAS:7732-18-5
 RTECS #:ZC0110000
 Fraction by Wt: 0.1-0.3%
 Other REC Limits:NONE SPECIFIED

===== Hazards Identification =====

LD50 LC50 Mixture:LD50 (ORAL RAT) IS 14300 MG/KG
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:PRODUCT IS IRRITATING TO EYES, SKIN
 AND MUCOUS MEMBRANES. UREA IS TOXIC BY INGESTION TO RUMINANTS
 (CATTLE).
 Explanation of Carcinogenicity:NONE OF THE COMPOUNDS IN THIS PRODUCT IS
 LISTED BY IARC, NTP, OR OSHA AS A CARCINOGEN.
 Effects of Overexposure:EYE:IRRITATION SKIN:IRRITATION
 INHALED:RESPIRATORY IRRITATION, POSSIBLE BREATHING DIFFICULTY.
 INGESTED:G/I IRRITATION, MAY BE HARMFUL IF SWALLOWED.
 Medical Cond Aggravated by Exposure:NONE GIVEN BY MANUFACTURER
 (SUPPLIER).

===== First Aid Measures =====

First Aid:EYE:FLUSH W/WATER 15 MIN, HOLD LIDS OPEN. SKIN:REMOVE
 CONTAMINATED CLOTHING AND LAUNDER BEFORE REUSE. WASH WITH SOAP &
 WATER. INHALED:REMOVE TO FRESH AIR. RESTORE BREATHING AS NEEDED.
 INGESTED:GIVE 2 LARGE GLASSES OF MILK OR WATER AND INDUCE
 VOMITING. NOTHING BY MOUTH IF UNCONSCIOUS. GET IMMEDIATE MEDICAL
 CARE.

===== Fire Fighting Measures =====

Extinguishing Media:EXTINGUISH FIRE WITH MEDIA APPROPRIATE FOR SOURCE
 OF FIRE.
 Fire Fighting Procedures:WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A
 FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED
 CONTAINERS WITH WATER SPRAY. CONTAIN RUNOFF.
 Unusual Fire/Explosion Hazard:COMBUSTION OR HEAT OF FIRE MAY PRODUCE
 HAZARDOUS DECOMPOSITION PRODUCTS AND VAPORS.

===== Accidental Release Measures =====

Spill Release Procedures:COLLECT IN CONTAINERS BEING CAREFUL TO KEEP
 ANY DUST TO A MINIMUM. PREVENT MODEST TO LARGE QUANTITIES FROM
 ENTERING ANY WATERWAY. BE CAREFUL; SPILLED UREA MAKES FLOORS ETC.
 SLIPPERY.
 Neutralizing Agent:NONE

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN A COOL, DRY, WELL VENTILATED
 AREA. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. PROTECT
 CONTAINERS FROM PHYSICAL DAMAGE.
 Other Precautions:NONE

===== Exposure Controls/Personal Protection =====

Respiratory Protection:RESPIRATOR WILL NOT NORMALLY BE NECESSARY. USE
 NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR OR RESPIRATOR FOR
 DUST/MIST IF EXPOSURE IS ABOVE THE TLV/PEL. SEE 29 CFR 1910.134
 FOR REGULATIONS PERTAINING TO RESPIRATOR USE.
 Ventilation:GENERAL ROOM VENTILATION IS NORMALLY ADEQUATE. USE LOCAL
 EXHAUST IF NECESSARY TO CONTROL EXPOSURE BELOW PEL/TLV.
 Protective Gloves:NEOPRENE, NITRILE, VPC OR NATURAL RUBBER
 Eye Protection:SAFETY GLASSES OR GOGGLES
 Other Protective Equipment:EYE WASH STATION AND SAFETY SHOWER.
 INDUSTRIAL-TYPE WORK CLOTHING AND APRON AS REQUIRED.

Work Hygienic Practices:USE GOOD CHEMICAL HYGIENE PRACTICE. AVOID
UNNECESSARY CONTACT.

Supplemental Safety and Health
NONE

===== Physical/Chemical Properties =====

HCC:N1

Melt/Freeze Pt:M.P/F.P Text:275F,135C

Decomp Temp:Decomp Text:275F,135C

Spec Gravity:PELLETS

Solubility in Water:COMPLETE

Appearance and Odor:WHITE TO TAN PELLETS/GRANULES, NO ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

HYPOCHLORITES (BLEACH)

Stability Condition to Avoid:NONE GIVEN BY MANUFACTURER (SUPPLIER).

Hazardous Decomposition Products:REACT W/ HYPOCHLORITES YIELDS NITROGEN
TRICHLORIDE;SPONTAN. EXPLOSIVE. COMB.= AMMONIA,CYANURIC
ACID,BIURET, NO(X)

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE I/A/W ALL FEDERAL, STATE AND LOCAL
REGULATIONS. MANUFACTURER SUGGESTS THAT DISPOSAL MAY BE DONE BY
USING AS FERTILIZER.

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assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Melamine

ACC# 96668

Section 1 - Chemical Product and Company Identification

MSDS Name: Melamine**Catalog Numbers:** AC125350000, AC125350010, AC125350025, AC125350050, AC220480000, AC220481000 AC220481000, AC220485000**Synonyms:** 2,4,6-Triamino-s-triazine; Aero; Cyanuramide; Cyanurotriamide; Cyanurotriamine; Cymel.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
108-78-1	Melamine	99	203-615-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystalline powder.

Caution! May cause eye, skin, and respiratory tract irritation.**Target Organs:** No data found.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea.**Inhalation:** May cause respiratory tract irritation.**Chronic:** This substance has caused adverse reproductive and fetal effects in laboratory animals.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.**Skin:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or

water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. ~~This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.~~

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam. Use agent most appropriate to extinguish fire.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. ~~Avoid generating dusty conditions.~~ Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Wash clothing before reuse.

Storage: Store in a cool, dry place. Keep container closed when not in use.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Melamine	none listed	none listed	none listed

OSHA Vacated PELs: Melamine: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Appearance: fine - white

Odor: None reported.

pH: Not available.

Vapor Pressure: 50 mm Hg @ 315 C

Vapor Density: 4.34

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: sublimes

Freezing/Melting Point: < 250 deg C

Decomposition Temperature: Not available.

Solubility: Slightly soluble in water.

Specific Gravity/Density: 1.57 g/cm³ @ 20°C

Molecular Formula: C₃H₆N₆

Molecular Weight: 126.12

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Dust generation, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents, mineral acids.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, cyanide fumes.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 108-78-1: OS0700000

LD50/LC50:

CAS# 108-78-1:

Draize test, rabbit, eye: 500 mg/24H Mild;

Inhalation, rat: LC50 = 3248 mg/m³;

Oral, mouse: LD50 = 3296 mg/kg;

Oral, rat: LD50 = 3161 mg/kg;

Skin, rabbit: LD50 = >1 gm/kg;

Carcinogenicity:

CAS# 108-78-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 108-78-1 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 108-78-1 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XI

Risk Phrases:

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 108-78-1: 1

Canada - DSL/NDSL

CAS# 108-78-1 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 108-78-1 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information
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MSDS Creation Date: 10/23/1998

Revision #3 Date: 8/25/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

CHEM SERVICE INC -- METHACRYLAMIDE, 0-1012 -- 6810-00N068052

===== Product Identification =====

Product ID:METHACRYLAMIDE, 0-1012

MSDS Date:09/01/1988

FSC:6810

NIIN:00N068052

MSDS Number: CBGYB

=== Responsible Party ===

Company Name:CHEM SERVICE INC

Box:3108

City:WEST CHESTER

State:PA

ZIP:19381

Country:US

Info Phone Num:215-692-3026

Emergency Phone Num:215-692-3026

CAGE:84898

=== Contractor Identification ===

Company Name:CHEM SERVICE INC

Box:3108

City:WEST CHESTER

State:PA

ZIP:19381

Country:US

Phone:215-692-3026

CAGE:84898

Company Name:CHEM SERVICE, INC

Address:660 TOWER LN

Box:599

City:WEST CHESTER

State:PA

ZIP:19301-9650

Country:US

Phone:610-692-3026

CAGE:8Y898

===== Composition/Information on Ingredients =====

Ingred Name:2-PROPENAMIDE, 2-METHYL-; (METHACRYLAMIDE)

CAS:79-39-0

RTECS #:UC6475000

OSHA PEL:N/K

ACGIH TLV:N/K

===== Hazards Identification =====

LD50 LC50 Mixture:LD50: (RAT) 459 MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:CONTACT LENSES SHOULD NOT BE WORN IN THE LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS - AVOID DIRECT PHYSICAL CONTACT! VAPORS AND/OR DIRECT EYE CONTACT CAN CAUSE SEVERE EYE BURNS. CAN CAUSE SKIN BURNS. CAN CAUSE SKIN IRRITATION. CAN CAUSE EYE IRRITATION. CAN BE HARMFUL IF ABSORBED THROUGH(EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT.

Effects of Overexposure:HLTH HAZ:THE SKIN. CAN BE HARMFUL IF INHALED.

CAN BE HARMFUL IF SWALLOWED. CAN BE IRRITATING TO MUCOUS MEMBRANES.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:ANTIDOTE IS A SUBSTANCE INTENDED TO COUNTERACT EFT OF A
 POISON. IT SHOULD BE ADMIN ONLY BY MD/TRAINED EMER PERS. MED ADVICE
 CAN BE OBTAINED FROM POIS CTL CTR. IN CASE OF CONT:EYES:FLUSH
 CONTINUOUSLY W /H*20 FOR AT LEAST 15-20 MIN. SKIN:FLUSH W/H*20 FOR
 15-20 MIN. IF NO BURNS HAVE OCCURRED-USE SOAP & H*20 TO CLEANSE
 SKIN. INHAL:REMOVE PATIENT TO FRESH AIR. ADMIN OXYGEN IF PATIENT IS
 HAVING (SUPDAT)

===== Fire Fighting Measures =====

Extinguishing Media:CARBON DIOXIDE, DRY CHEMICAL POWDER OR WATER SPRAY.
 Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE
 EQUIPMENT .
 Unusual Fire/Explosion Hazard:NO EXPLOSION LIMITS ARE AVAILABLE FOR
 THIS COMPOUND.

===== Accidental Release Measures =====

Spill Release Procedures:EVACUATE AREA. WEAR APPROPRIATE OSHA
 NIOSH/MSHA-REGULATED EQUIPMENT. ABSORB ON VERMICULITE OR SIMILAR
 MATERIAL. SWEEP UP AND PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR
 DISPOSAL. WASH CONTAMINATED SUR FACES TO REMOVE ANY RESIDUES.
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:USE APPROP OSHA/MSMA APPRVD SAFETY
 EQUIP. AVOID CNTCT W/SKIN, EYES & CLTHG. KEEP TIGHTLY CLSD & STORE
 IN COOL DRY PLACE. STORE ONLY W/COMPAT CHEMS.
 Other Precautions:PERS NOT SPECIFICALLY & PROPERLY TRAINED SHOULD NOT
 HNDLD THIS CHEM/ITS CNTNR. THIS PROD IS FURNISHED FOR LABORATORY
 USE ONLY! OUR PRODS MAY NOT BE USED AS DRUGS, COSMETICS,
 AGRICULTURAL/PESTICIDAL PR ODS, FOOD ADDITIVES/AS HOUSEHOLD CHEMS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR
 EXPOSURE OF CONCERN .
 Ventilation:THIS CHEMICAL SHOULD BE HANDLED ONLY IN A HOOD.
 Protective Gloves:IMPERVIOUS GLOVES .
 Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS(SUPDAT)
 Other Protective Equipment:EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET
 ANSI DESIGN CRITERIA .
 Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
 Supplemental Safety and Health
 FIRST AID PROC:DIFFICULTY BREATHING. IF PATIENT HAS STOPPED BREATHING
 ADMINISTER ARTIFICIAL RESPIRATIONS. IF PATIENT IS IN CARDIAC ARREST
 ADMINISTER CPR. CONTINUE LIFE SUPPORTING MEASURES UNTIL MEDICAL
 ASSISTANCE HAS ARRIVED. INGEST:CALL MDIMMEDIATELY . EYE PROT:& FULL
 LENGTH FACESHIELD .

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:232F,111C
 Solubility in Water:VERY SLIGHTLY SOL

Appearance and Odor:WHITE CRYSTALLINE SOLID. ODORLESS COMPOUND.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

INCOMPATIBLE WITH STRONG ACIDS. INCOMPATIBLE WITH STRONG REDUCING AGENTS. INCOMPATIBLE WITH STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:SENSITIVE TO LIGHT - DARK COLOR DOES NOT AFFECT PURITY. SENSITIVE TO HEAT. MAY POLYMERIZE UPON STANDING.

Hazardous Decomposition Products:LIBERATES TOXIC FUMES. DECOMPOSITION PRODUCTS ARE CORROSIVE.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS . BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.

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Material Safety Data Sheet

Sodium amide

ACC# 01600

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium amide**Catalog Numbers:** AC197050000, AC197050010, AC197051000, AC197055000, AC339240000, AC339240250, AC339241000, NC9654303, XXSDAM750G**Synonyms:** Sodamide.**Company Identification:**

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7782-92-5	Sodium amide	>95	231-971-0

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystalline powder.

Danger! Causes eye and skin burns. Causes digestive and respiratory tract burns. Reacts violently with water. May form explosive peroxides.**Target Organs:** Eyes, skin, mucous membranes.**Potential Health Effects****Eye:** Causes eye burns. May cause eye injury.**Skin:** Causes skin burns.**Ingestion:** Causes gastrointestinal irritation with nausea, vomiting and diarrhea. Causes gastrointestinal tract burns.**Inhalation:** May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Sodium amide reacts violently with water forming NaOH and NH₃.

Extinguishing Media: Use dry sand or earth to smother fire. Do NOT use carbon dioxide. DO NOT USE WATER OR FOAM.

Flash Point: Not available.

Autoignition Temperature: 450 deg C (842.00 deg F)

Explosion Limits, Lower:Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: ; Instability;; Special Hazard: -W-

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Provide ventilation. Do not get water inside containers.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Use only in a chemical fume hood.

Storage: Store in a cool, dry place. Store in a tightly closed container. Keep under a nitrogen blanket. Water free area. Containers should be dated when opened and tested periodically for the presence of peroxides. All peroxidizable substances should be stored away from heat and light and be protected from ignition sources.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium amide	none listed	none listed	none listed

OSHA Vacated PELs: Sodium amide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder

Appearance: grey - white

Odor: ammonia-like

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 400 deg C

Freezing/Melting Point: 210 deg C

Decomposition Temperature: 500 deg C

Solubility: Reacts

Specific Gravity/Density: Not available.

Molecular Formula: H₂NNa

Molecular Weight: 39.01

Section 10 - Stability and Reactivity

Chemical Stability: When exposed to the atmosphere, sodium amide rapidly absorbs H₂O and CO₂. When only limited absorption takes place, as in poorly sealed containers, products are formed which render the resulting mixture highly explosive. The formation of oxidation products is accompanied by the development of a yellow/brownish color. If discoloration is noticed, the substance should be destroyed at once by covering with much benzene, toluene, or kerosene and slowly adding diluted ethanol with stirring.

Conditions to Avoid: Ignition sources, dust generation, exposure to air, excess heat, exposure to moist air or water.

Incompatibilities with Other Materials: Potassium chlorates, chromic anhydride, Sodium amide reacts violently with water forming NaOH and NH₃. The reaction with alcohol is considerably slower..

Hazardous Decomposition Products: Nitrogen oxides, ammonia, sodium hydroxide.

Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:

CAS# 7782-92-5 unlisted.

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 7782-92-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.**Teratogenicity:** No data available.**Reproductive Effects:** No data available.**Mutagenicity:** No data available.**Neurotoxicity:** No data available.**Other Studies:**

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.**RCRA U-Series:** None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	WATER-REACTIVE SOLID, CORROSIVE, N.O.S.	WATER-REACTIVE SOLID, CORROSIVE, N.O.S. (SODIUM AMIDE)
Hazard Class:	4.3	4.3
UN Number:	UN3131	UN3131
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL**TSCA**

CAS# 7782-92-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7782-92-5 can be found on the following state right to know lists: New Jersey.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

F C

Risk Phrases:

R 14/15 Reacts violently with water liberating extremely flammable gases.

R 19 May form explosive peroxides.

R 34 Causes burns.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 7/8 Keep container tightly closed and dry.

S 43D In case of fire, use sodium carbonate or dry sand (never use water).

WGK (Water Danger/Protection)

CAS# 7782-92-5: 2

Canada - DSL/NDSL

CAS# 7782-92-5 is listed on Canada's DSL List.

Canada - WHMIS

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
--

MSDS Creation Date: 10/14/1999

Revision #3 Date: 10/03/2005

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CELANESE CHEMICAL -- PARAFORMALDEHYDE, HI ASSY (PRILL/POWDER) -- 6850-00F005023

===== Product Identification =====

Product ID:PARAFORMALDEHYDE, HI ASSY (PRILL/POWDER)
 MSDS Date:01/01/1987
 FSC:6850
 NIIN:00F005023
 MSDS Number: BBRNY
 === Responsible Party ===
 Company Name:CELANESE CHEMICAL/DALLAS, TX 75247
 Emergency Phone Num:(806) 665-5522
 CAGE:62215
 === Contractor Identification ===
 Company Name:CELANESE CHEMICAL CO INC; (HOECHST CELANESE CORP)
 Address:1250 W MOCKINGBIRD LN
 Box:City:DALLAS
 State:TX
 ZIP:75246
 Country:US
 Phone:800-424-9300
 CAGE:62215

===== Composition/Information on Ingredients =====

Ingred Name:PARAFORMALDEHYDE (SARA III)
 CAS:30525-89-4
 RTECS #:RV0540000
 Fraction by Wt: 97%
 EPA Rpt Qty:1000 LBS
 DOT Rpt Qty:1000 LBS

===== Hazards Identification =====

Effects of Overexposure:SEVERE IRRITATION AND INFLAMMATION OF MOUTH, THROAT, STOMACH, IRRITATING TO UPPER RESP TRACT.

===== First Aid Measures =====

First Aid:INGESTION: INDUCE VOMITING OF CONSCIOUS PATIENT IMMEDIATELY BY GIVING 2 GLASSES OF WATER. INHALATION: REMOVE FROM CONTAMINATED AREA. SKIN: REMOVE CONTAMINATED CLOTHING & WASH W/WATER. EYE: FLUSH W/WATER FOR AT LEAST 15 MINUTES. CONSULT A PHYS.

===== Fire Fighting Measures =====

Flash Point:158F (TCC)
 Lower Limits:7.0%
 Upper Limits:73.0
 Extinguishing Media:USE DRY CHEMICAL, "ALCOHOL FOAM" OR CO2.
 Fire Fighting Procedures:WEAR SCBA AND COMPLETE PERSONAL PROTECTIVE EQUIPMENT.
 Unusual Fire/Explosion Hazard:AS W/MOST ORGANIC INDUSTRIAL SOLIDS, PARAFORMALDEHYDE MAY FORM AN EXPLOSIVE ORGANIC DUST CLOUD.

===== Accidental Release Measures =====

Spill Release Procedures:PLACE LEAKING CONTAINERS IN A WELL VENTILATED

AREA. ~~ELIMINATE~~ IGNITION SOURCES. USE AM TO CONTROL VAPORS. FLUSH W/WATER SPARINGLY OR USE AN ABSORBANT TO CONIN/REMOVE SPILL. DIKE/AVOID RUN-OFF INTO SEW ER.

==== Handling and Storage =====

Handling and Storage Precautions:STORED IN A COOL, DRY PLACE W/ADEQUATE VENTILATION. ~~KEEP AWAY FROM HEAT, SPARKS & FLAMES~~. AVOIBREATHING VAPORS OR DUST.

Other Precautions:AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING. DO NOT ENTER STORAGE AREA LESS ADEQUATELY VENTILATED.

==== Exposure Controls/Personal Protection =====

Respiratory Protection:USE FULL-FACE NIOSH APPROVED ACID GAS CARTRIDGE OR CANISTER RESP.

Ventilation:LOCAL EXHAUST/MECHANICAL

Protective Gloves:NEOPRENE/RUBBER

Eye Protection:SAFETY GOGGLES

Other Protective Equipment:AN IMPERVIOUS BODY COVERING/BOOTS. A SAFETY SHOWER/EYEBATH.

Supplemental Safety and Health

MSDS DATED: 07/84.

==== Physical/Chemical Properties =====

Vapor Pres:1

Vapor Density:1.03

Solubility in Water:MODERATE

Appearance and Odor:WHITE PRILL/FINE POWDER; PUNGENT FORMALDEHYDE

==== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

CAUSTICS, STRONG ALKALIES, ISOCYANATES, ANHYDRIDES, OXIDES

Stability Condition to Avoid:HIGH TEMP CAUSES LIBERATION OF FORMALDEHYDE GAS.

Hazardous Decomposition Products:CO₂, CO, HYDROGEN AND FORMALDEHYDE GAS

==== Disposal Considerations =====

Waste Disposal Methods:NEUTRALIZE W/AMMONIUM HYDROXIDE OR COMPLEX W/SODIUM SULFITE. REPORTABLE QUANTITY (1000 LB/DAY). INCINERATION, BIOLOGICAL OXIDATION W/ACCLIMATION SYS, LANDFILL IF SOLIDIFIED.

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WORTHINGTON BIOCHEMICAL CORP -- PECTINASE -- 6550-00F042854

===== Product Identification =====

Product ID:PECTINASE
 MSDS Date:06/01/1994
 FSC:6550
 NIIN:00F042854
 MSDS Number: CFBVV
 === Responsible Party ===
 Company Name:WORTHINGTON BIOCHEMICAL CORP
 Address:HALLS MILL RD
 City:FREEHOLD
 State:NJ
 ZIP:07728-5000
 Country:US
 Info Phone Num:908-462-3838
 Emergency Phone Num:908-462-3838
 CAGE:GO448

==== Contractor Identification ====

Company Name:WORTHINGTON BIOCHEMICAL CORP
 Address:HALLS MILL RD
 City:FREEHOLD
 State:NJ
 ZIP:07728-5000
 Country:US
 Phone:908-462-3838
 CAGE:GO448

===== Composition/Information on Ingredients =====

Ingred Name:PECTINASE
 CAS:9032-75-1

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:MAY CAUSE SKIN, EYE/RESPIRATORY TRACT
 IRRITATION UPON CONTACT. ALLERGIC REACTIONS IN CERTAIN SENSITIVE
 INDIVIDUALS MAY DEVELOP.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:IRRITATION, ALLERGIC REACTIONS.
 Medical Cond Aggravated by Exposure:ALLERGIES, ASTHMA.

===== First Aid Measures =====

First Aid:INHALATION: REMOVE TO FRESH AIR. EYES/SKIN: WASH THOROUGHLY
 W/WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Fire Fighting Procedures:NONE
 Unusual Fire/Explosion Hazard:NONE

===== Accidental Release Measures =====

Spill Release Procedures:AVOID PHYSICAL CONTACT & DUST DURING REMOVAL.
 USE NORMAL CLEAN-UP PROCEDURES & WASH THOROUGHLY W/WATER.

=====
Handling and Storage
=====

Handling and Storage Precautions:NONE
Other Precautions:NONE

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:WEAR DUST MASK.
Ventilation:LOCAL EXHAUST: AS REQUIRED. MECHANICAL (GENERAL): VENT FAN.
Protective Gloves:RECOMMENDED
Eye Protection:RECOMMENDED
Supplemental Safety and Health
SOLUBILITY IN WATER: POWDERS-APPRECIABLE. LIQUIDS-MISCIBLE.

=====
Physical/Chemical Properties
=====

Solubility in Water:(SEE SUPP)
Appearance and Odor:POWDERS- WHITE TO TAN. LIQUIDS-WHITE TO BROWN. BOTH
HAVE TYPICAL ENZYME ODOR.

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES

=====
Disposal Considerations
=====

Waste Disposal Methods:FLUSH IN SEWERAGE SYSTEM W/WATER IAW/FEDERAL,
STATE & LOCAL REGULATIONS.

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EASTMAN KODAK CO -- SAPONIN -- 6850-00N003685

===== Product Identification =====

Product ID:SAPONIN
 MSDS Date:08/01/1978
 FSC:6850
 NIIN:00N003685
 MSDS Number: BCKPX
 === Responsible Party ===
 Company Name:EASTMAN KODAK CO
 Address:343 STATE ST
 City:ROCHESTER
 State:NY
 ZIP:14650
 Info Phone Num:716-722-2121
 Emergency Phone Num:716-458-1000 EX 85566
 CAGE:19139

=== Contractor Identification ===

Company Name:EASTMAN KODAK CO GOVERNMENT MARKETS CONTRACTS
 Address:343 STATE ST
 Box:City:ROCHESTER
 State:NY
 ZIP:14650-1115
 Country:US
 Phone:716-722-5151/(800) 242-2424
 CAGE:19139

===== Composition/Information on Ingredients =====

Ingred Name:NO INGREDIENT FOR THIS FORMULATION_INGREDIENT

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL MOUSE LD50=3000MG/KG
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:SAPONIN IS A BITTER TASTING NATURAL
 PRODUCT WHICH IS MODERATELY TOXIC TO MAN ON ORAL BASIS.
 HOWEVER,INJECTED IT RAPIDLY DESTROYS RED BLOOD CELLS.
 Effects of Overexposure:EYE:IRRITATION,TRANSITORY CORNEAL INJURY.
 SKIN:PROLONGED/REPEATED CONTACT MAY CAUSE IRRITATION.
 INHALED:RESPIRATORY IRRITATION.
 Medical Cond Aggravated by Exposure:NONE REPORTED. HMIS:EXPECT BLOOD
 CONDITIONS SUCH AS ANEMIA ETC.

===== First Aid Measures =====

First Aid:EYE:FLUSH WITH WATER 15 MIN. SKIN:WASH WITH SOAP & WATER.
 INHALED:REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION OR OXYGEN
 AS NEEDED. INGESTED:DO NOT INDUCE VOMITING. GIVE LARGE QUANTITY OF
 MILK OR WATER.(NOTHING BY MOUTH IF UNCONSCIOUS.)GET IMMEDIATE
 MEDICAL ATTENTION. IF ANY IRRITATION PERSISTS OR IS SEVERE,GET
 PROMPT MEDICAL CARE.

===== Fire Fighting Measures =====

Flash Point:NONE
 Extinguishing Media:CARBON DIOXIDE, DRY CHEMICAL, FOAM, WATER FOG.

Fire Fighting Procedures:WEAR SELF CONTAINED BREATHING APPARATUS.
 Unusual Fire/Explosion Hazard:NONE

===== Accidental Release Measures =====

Spill Release Procedures:~~BEING CAREFUL NOT TO RAISE DUST~~ COLLECT IN PAPER OR OTHER CARTON OF FLAMMABLE MATERIAL. WASH AREA WELL WITH SOAP & WATER.

Neutralizing Agent:NONE

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN A COOL, DRY, WELL VENTILATED AREA.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED RESPIRATOR EQUIPPED WITH CARTRIDGE FOR DUST OR SUPPLIED AIR RESPIRATOR IF EXPOSED ABOVE TLV/PEL.

Ventilation:USE NORMAL ROOM VENTILATION.

Protective Gloves:RUBBER, PLASTIC.

Eye Protection:SAFETY GLASSES OR SPLASH GOGGLES.

Other Protective Equipment:AS NEEDED TO PREVENT SKIN CONTACT.

Work Hygienic Practices:USE STRICT CHEMICAL HYGIENE PRACTICE. AVOID ALL CONTACT. KEEP OUT OF CUTS, ABRASIONS, ETC.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:N1

Boiling Pt:B.P. Text:DECOMPOSES

Spec Gravity:>1

Solubility in Water:FORMS EMULSION

Appearance and Odor:YELLOW TO TAN POWDER, PUNGENT ODOR.

Percent Volatiles by Volume:NEGLIG

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 STRONG OXIDIZERS.

Stability Condition to Avoid:NONE REPORTED.

Hazardous Decomposition Products:CARBON OXIDES.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE I/A/W FEDERAL, STATE, LOCAL REGULATIONS.
 MFR SUGGESTS INCINERATION.

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SYNTHETIC PRODUCTS COMPANY -- MAGNESIUM STEARATE -- 6850-00N011085

===== Product Identification =====

Product ID:MAGNESIUM STEARATE
 MSDS Date:07/20/1989
 FSC:6850
 NIIN:00N011085
 MSDS Number: BHVNG
 === Responsible Party ===
 Company Name:SYNTHETIC PRODUCTS COMPANY
 Address:1000 WAYSIDE ROAD
 City:CLEVELAND
 State:OH
 ZIP:44110
 Info Phone Num:216-531-6010
 Emergency Phone Num:216-531-6010
 CAGE:0HBRI
 === Contractor Identification ===
 Company Name:SYNTHETIC PRODUCTS CO
 Address:1000 WAYSIDE RD
 Box:City:CLEVELAND
 State:OH
 ZIP:44110
 Country:US
 Phone:216-531-6010
 CAGE:0HBRI

===== Composition/Information on Ingredients =====

Ingred Name:MAGNESIUM STEARATE.
 CAS:557-04-0
 Other REC Limits:N/K
 OSHA PEL:N/K
 ACGIH TLV:N/K

===== Hazards Identification =====

LD50 LC50 Mixture:N/K
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:SEE SIGNS AND SYMPTOMS OF
 OVEREXPOSURE.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:EYES:MAY CAUSE DISCOMFORT WITH CONTACT.SKIN:MAY
 CAUSE DISCOMFORT WITH PROLONGED CONTACT.INGESTION:MAY CAUSE
 GASTRO-INTESTINAL DISCOMFORT IF SWALLOWED.INHALATION:DUST MAY CAUSE
 DISCOMFORT OF THE NOSE,T HROAT,AND UPPER RESPIRATORY TRACT,COUGHING
 AND CHOKING.
 Medical Cond Aggravated by Exposure:N/K

===== First Aid Measures =====

First Aid:EYES:FLUSH WITH WATER FOR AT LEAST 15 MINUTES.REMOVE ANY
 CONTACT LENSES TO ENSURE THOROUGH FLUSHING.IF DISCOMFORT
 PERSISTS,CONSULT PHYSICIAN.SKIN:WASH WITH MILD SOAP AND
 WATER.INGESTION:AS A PRECAUTIO NARY MEASURE,CONSULT PHYSICIAN IF
 SWALLOWED.INHALATION:REMOVE TO FRESH AIR.

=====
 Fire Fighting Measures
 =====

Flash Point Method:PMCC

Flash Point:>500F,260C

Extinguishing Media:WATER,CO*2,FOG,DRY CHEMICAL.

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:~~DUST EXPLOSIONS MAY OCCUR UNDER CONDITIONS OF HIGH DUST CONCENTRATION IN THE PRESENCE OF AN IGNITION SOURCE~~ HAZ DECOMP PRODUCTS:CARBON DIOXIDE,MAGNESIUM OXIDE.

=====
 Accidental Release Measures
 =====

Spill Release Procedures:WORKPLACE RELEASE:~~REMOVE IGNITION SOURCES~~ SHOVEL OR VACUUM INTO DRUMS.SOIL RELEASE:TREAT THE SAME AS WORKPLACE RELEASE.WATER RELEASE:NOTIFICATION OF THE PROPER GOVERNMENT AGENCY MAY BE APPROPRIATE.AIR ~~RELEASE:AVOID RAISING DUST CLOUDS~~

Neutralizing Agent:N/K

=====
 Handling and Storage
 =====

Handling and Storage Precautions:STORE IN COOL,DRY AREA,AWAY FROM HEAT,SPARK OR FLAME.AVOID SKIN AND EYE CONTACT.WASH HANDS AFTER HANDLING.WEAR PROPER PERSONAL PROTECTIVE EQUIPMENT.

Other Precautions:~~DUST EXPLOSIONS MAY OCCUR UNDER CONDITIONS OF HIGH DUST CONCENTRATION IN THE PRESENCE OF AN IGNITION SOURCE.~~

=====
 Exposure Controls/Personal Protection
 =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL AND GENERAL VENTILATION NECESSARY TO KEEP AIR CONCENTRATION BELOW LEVEL OF CONCERN .

Protective Gloves:RUBBER

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:REPEATED AND PROLONGED CONTACT:WEAR IMPERVIOUS CLOTHING AND HALF MASK W/CARTRIDGE.

Work Hygienic Practices:AS WITH ANY CHEMICAL,AVOID CONTACT WITH SKIN AND EYES.DO NOT INGEST.

Supplemental Safety and Health

MELTING POINT:291.2-334.4F,144-168C.

=====
 Physical/Chemical Properties
 =====

Melt/Freeze Pt:M.P/F.P Text:SUP DA

Decomp Temp:Decomp Text:N/K

Vapor Pres:NIL

Vapor Density:N/K

Spec Gravity:>1.0 (WATER=1)

Evaporation Rate & Reference:N/K

Solubility in Water:NEGLIGIBLE

Appearance and Odor:FINE WHITE POWDER,MILD FATTY ODOR.

=====
 Stability and Reactivity Data
 =====

Stability Indicator/Materials to Avoid:YES
 STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:NONE

Hazardous Decomposition Products:CARBON DIOXIDE,MAGNESIUM OXIDE.

Conditions to Avoid Polymerization:WILL NOT OCCUR.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE WITH
FEDERAL, STATE AND LOCAL REGULATIONS .

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document should seek competent professional advice to verify and
assume responsibility for the suitability of this information to their
particular situation.

ONCOR INC -- TRISODIUM CITRATE -- 6810-00F048668

===== Product Identification =====

Product ID:TRISODIUM CITRATE
 MSDS Date:03/01/1989
 FSC:6810
 NIIN:00F048668
 MSDS Number: BZFTV
 === Responsible Party ===
 Company Name:ONCOR INC
 Address:209 PERRY PKY SUITE 7
 City:GAITHERSBURG
 State:MD
 ZIP:20877-5000
 Country:US
 Info Phone Num:301-963-3500/800-776-6267
 Emergency Phone Num:301-963-3500/800-776-6267
 CAGE:016E9

=== Contractor Identification ===

Company Name:ONCOR INC
 Address:209 PERRY PKY SUITE 7
 City:GAITHERSBURG
 State:MD
 ZIP:20877-5000
 Country:US
 Phone:301-963-3500/800-776-6267
 CAGE:016E9

===== Composition/Information on Ingredients =====

Ingred Name:SODIUM CITRATE
 CAS:6132-04-3

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:INHALATION: MAY CAUSE IRRITATION TO
 UPPER RESPIRATORY TRACT. SKIN/EYES: MAY CAUSE IRRITATION.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:IRRITATION

===== First Aid Measures =====

First Aid:INGESTION: IF CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF
 WATER. INHALATION: MOVE TO FRESH AIR. EYES: IMMEDIATELY FLUSH
 W/COPIOUS AMOUNTS OF WATER FOR 15 MINS. SKIN: IMMEDIATELY WASH
 W/PLENTY OF SOAP & WATER FOR 15 MINS. OBTAIN MEDICAL ATTENTION IN
 ALL CASES.

===== Fire Fighting Measures =====

Extinguishing Media:USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING
 FIRE.
 Fire Fighting Procedures:WEAR PROTECTIVE EQUIPMENT & SELF CONTAINED
 BREATHING APPARATUS W/FULL FACEPIECE OPERATED IN POSITIVE PRESSURE
 MODE.
 Unusual Fire/Explosion Hazard:TOXIC GASES PRODUCED WHEN BURNED.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP & REMOVE.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP CONTAINER TIGHTLY CLOSED.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NONE
Ventilation:GENERAL/LOCAL EXHAUST
Protective Gloves:REQUIRED
Eye Protection:SAFETY GOGGLES
Supplemental Safety and Health

===== Physical/Chemical Properties =====

Solubility in Water:APPRECIABLE
Appearance and Odor:WHITE CRYSTALS, GRANULES/POWDER. ODORLESS

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
Stability Condition to Avoid:FLAME
Hazardous Decomposition Products:CO, CO2

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE W/LOCAL, STATE & FEDERAL REGULATIONS.

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FLUKA CHEMICAL CORP -- L-TYROSINE, 93829 -- 6810-00N092413

===== Product Identification =====

Product ID:L-TYROSINE, 93829
 MSDS Date:07/01/1999
 FSC:6810
 NIIN:00N092413
 Status Code:A
 MSDS Number: CJRSY
 === Responsible Party ===
 Company Name:FLUKA CHEMICAL CORP
 Address:1001 W ST PAUL
 City:MILWAUKEE
 State:WI
 ZIP:53233
 Country:US
 Info Phone Num:414-273-3850
 Emergency Phone Num:414-273-3850
 CAGE:63181
 === Contractor Identification ===
 Company Name:FLUKA CHEMICAL CORP
 Address:1001 WEST ST PAUL
 Box:City:MILWAUKEE
 State:WI
 ZIP:53233
 Country:US
 Phone:414-273-3850
 CAGE:63181

===== Composition/Information on Ingredients =====

Ingred Name:TYROSINE, L-
 CAS:60-18-4
 RTECS #:YP2275600

===== Hazards Identification =====

LD50 LC50 Mixture:SEE TOXICOLOGICAL INFORMATION.
 Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INHALATION,
 INGESTION OR SKIN ABSORPTION. CAUSES EYE AND SKIN IRRITATION.
 MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY
 TRACT. TARGET ORGAN DATA: MATERNAL EFFECTS (OVARIES, FALLOPIAN
 TUBES).
 Effects of Overexposure:SEE HEALTH HAZARDS.

===== First Aid Measures =====

First Aid:EYES: IMMEDIATELY FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT
 LEAST 15 MINUTES. SKIN: IMMEDIATELY WASH WITH SOAP AND COPIOUS
 AMOUNTS OF WATER. WASH CONTAMINATED CLOTHING BEFORE REUSE.
 INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
 RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGESTION:
 WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL MD.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures:USE NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR NIOSH APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL. ~~AVOID RAISING DUST~~. VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

===== Handling and Storage =====

Handling and Storage Precautions:DO NOT BREATHE DUST. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. KEEP TIGHTLY CLOSED. STORE IN A COOL, DRY PLACE.

Other Precautions:IRRITANT.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST REQUIRED.

Protective Gloves:COMPATIBLE CHEMICAL-RESISTANT GLOVES.

Eye Protection:ANSI APPROVED CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:ANSI APPROVED EYE WASH & DELUGE SHOWER . WEAR SUITABLE PROTECTIVE CLOTHING.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

MFR'S INFORMATION ON INGREDIENTS: MF: C9H11NO3. EC NO: 200-460-4. --

PHYSICAL & CHEMICAL PROPERTIES: SOLUBILITY: IN ETHER - INSOLUBLE; IN ETHANOL - INSOLUBLE; IN ACETONE - INSOLUBLE.

===== Physical/Chemical Properties =====

Solubility in Water:SLIGHTLY SOLUBLE

Appearance and Odor:WHITE POWDER

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products:THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE AND NITROGEN OXIDES.

Conditions to Avoid Polymerization:WILL NOT OCCUR.

===== Toxicological Information =====

Toxicological Information:TO THE BEST OF MFR'S KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED. TOXICITY DATA: LD50: (IPR,MUS) >1450 MG/KG - YKKZAJ 97,1117,1977. ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

===== Ecological Information =====

Ecological:DATA NOT YET AVAILABLE.

===== Disposal Considerations =====

Waste Disposal Methods: DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

===== MSDS Transport Information =====

Transport Information: CONTACT FLUKA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

===== Regulatory Information =====

Federal Regulatory Information: EUROPEAN INFORMATION: IRRITANT. R 36/37/38 - IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN. S 26 - IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE. S 36 - WEAR SUITABLE PROTECTIVE CLOTHING. - REVIEWS, STANDARDS AND REGULATIONS: OEL=MAK. NOHS 1974: HZD 81869; NIS 2; TNF 133; NOS 4; TNE 1421. NOES 1983: HZD 81869; NIS 3; TNF 275; NOS 12; TNE 14731; TFE 12371. EPA TSCA SECTION 8(B) CHEMICAL INVENTORY.

State Regulatory Information:

===== Other Information =====

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MSDS Number: T0104 * * * * * *Effective Date: 05/14/03* * * * * * *Supersedes: 01/03/03*

MSDS**Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



Mallinckrodt
CHEMICALS



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-627-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

TARTARIC ACID

1. Product Identification

Synonyms: d-tartaric acid; 2,3-dihydroxybutanedioic acid

CAS No.: 87-69-4

Molecular Weight: 150.09

Chemical Formula: HOOC(CH₂O)₂COOH

Product Codes:

J.T. Baker: 0386, 4104, 4105

Mallinckrodt: 2307, 2312, 2314, 2679

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tartaric Acid	87-69-4	100%	Yes

3. Hazards Identification

Emergency Overview

CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.**J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)**

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Orange (General Storage)

Potential Health Effects

Information on the human health effects from exposure to this substance is limited.

Inhalation:

Nuisance dust. May cause coughing and sneezing.

Ingestion:

Mildly irritating to the gastro-intestinal system if large quantities are ingested. The effect is that of an acid, producing abdominal pain, nausea, vomiting and diarrhea.

Skin Contact:

No adverse effects expected.

Eye Contact:

Mild irritant and possibly temporarily abrasive. Reddening and tearing may be experienced.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If swallowed, give several glasses of water to drink to dilute. If large amounts were swallowed or symptoms occur, get medical advice. Never give anything by mouth to an unconscious person.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do

not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White crystals.

Odor:

Odorless.

Solubility:

ca. 133 g/100 g of water.

Density:

1.76

pH:

No information found.

% Volatiles by volume @ 21C (70F):

No information found.

Boiling Point:

Not applicable.

Melting Point:

206C (403F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Silver and silver compounds.

Conditions to Avoid:

Incompatibles.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Tartaric Acid (87-69-4)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Tartaric Acid (87-69-4)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Tartaric Acid (87-69-4)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Tartaric Acid (87-69-4)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Tartaric Acid (87-69-4)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Label Hazard Warning:

CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.

Label Precautions:

Avoid contact with eyes.
 Wash thoroughly after handling.
 Avoid breathing dust.
 Keep container closed.
 Use with adequate ventilation.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Material Safety Data Sheet

Science Stuff, Inc.
1104 Newport Avenue
Austin, TX 78753

Phone (512) 837-6020
Chemtrec 800-424-9300
24 Hour Emergency Assistance

Section 1 Identification					
Product Number:	C1408				
Product Name:	Cadmium Sulfate Reagent A.C.S.	Health:	2		
Trade/Chemical Synonyms		Flammability:	0		
Formula:	CdSO ⁴	Reactivity:	0		
RTECS:	EV2700000	Hazard Rating:	Least Slight Moderate High Extreme		
C.A.S.	CAS# 10124-36-4		0	1	2
			3	4	
		NA = Not Applicable NE = Not Established			
Section 2 Component Mixture					
Sara 313	Component	CAS Number	%	Dim	Exposure Limits:
<input type="checkbox"/>	Cadmium Sulfate	CAS# 10124-36-4	100%	W/W	OSHA TWA 0.2 mg (Cd)/mf
Section 3 Hazard Identification (Also see section 11)					
May be fatal if inhaled, swallowed or absorbed thru the skin Avoid all contact. Use with adequate ventilation. Wash thoroughly after use. Keep container closed.					
Section 4 First Aid Measures					
May be fatal if inhaled, swallowed or absorbed thru the skin Avoid all contact. Use with adequate ventilation. Wash thoroughly after use. Keep container closed.					
FIRST AID: SKIN: Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention					
EYES: Wash eyes with plenty of water for at least 15 minutes, lifting lids occasionally. Seek Medical Aid. INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen					
INGESTION: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Induce vomiting by giving one teaspoon of Syrup of Ipecac.					
Section 5 Fire Fighting Measures					
Fire Extinguisher Type:	Water spray, dry chemical, carbon dioxide, alcohol foam				
Fire/Explosion Hazards:	Material non-combustible solid but dust can be moderate fire hazard when exposed to heat or flame.				
Fire Fighting Procedure:	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and clothing.				
Section 6 Accidental Release Measures					
Sweep up and place in suitable (fiberboard) containers for reclamation or later disposal. Do not generate dust.					
Section 7 Handling and Storage					
Store in a cool dry place. Avoid causing physical damage. Keep container tightly closed.					
Section 8 Exposure Controls & Personal Protection					
Respiratory Protection: NIOSH approved dust mask					
Ventilation:		Mechanical:	Hand Impervious Protection: protective gloves		
		<input type="checkbox"/>			
Local Exhaust:		Eye Goggles and Face Protection: Shield			
<input checked="" type="checkbox"/>					
Other Protective Equipment: Wear appropriate clothing to prevent skin exposure					
Section 9 Physical and Chemical Properties					
Melting Point:	Looses H2O @40° C	Specific Gravity	3.08		
Boiling Point:	Not applicabel	Percent Volatile by Volume:	0		
Vapor Pressure:	Not applicable	Evaporation Rate:	0		
Vapor Density:	Not applicable	Evaporation Standard:			
Solubility in Water:	Freely soluble	Auto ignition Temperature:	Not applicable		
Appearance and Odor:	Colorless crystals, odorless	Lower Flamm. Limit in Air:	Not applicable		
Flash Point:	Non combustible	Upper Flamm. Limit in Air:	Not applicable		
Section 10 Stability and Reactivity Information					
Stability: Stable Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition.					
Materials to Avoid: Oxidizing agents, metals, hydrogen azide, selenium, and tellerium					
Hazardous Decomposition Products: Oxides of sulfur and contianed metal.					
Hazardous Polymerization: Will Not Occur					
Condition to Avoid: None known					
Section 11 Additional Information					
Effects of overexposure. Acute and chronic: Absorption most efficient way to respiratory tract. Irritation, headache, metallic taste. cough. Severe expo-shortness of breath, chest pain, flu-like symptoms, fever, chills, sweat, nausea, muscular pain. Possible liver and kidney damage, death. Symptoms may be delayed up to 24 hours. Persons with pre-existing disorders may be more susceptible.					
DOT Classification: Cadmium Compound, n.o.s. (Cadmium Sulfate), 6.1, UN2570, PG II					
DOT regulations may change from time to time. Please consult the most recent version of the relevant regulations.					
Revision No:0 Date Entered: 1/1/2003 Approved by: WPF					

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source. Users of this material should satisfy themselves by independent investigation of current scientific and medical information that this material may be safely handled.



Technically Sustained by User

410 Material Safety Data Sheet

To perform in a gun, powders must ignite easily and burn rapidly. These characteristics require use of common sense to avoid accidents. **YOU MUST OBSERVE THESE PRECAUTIONS:**

MATERIAL SAFETY DATA SHEET



New River Energetics
Route 114, PO Box 6
Radford, VA 24141-0096
Phone (540) 639-7800

Product Name:	Propellant 410
LLC MSDS Number:	5323
Product ID#:	
Preparation Date:	March 3, 2003

Business Hours: 540-639-7323
24 Hr. Spill (Chemtrec): 1-800-424-9300

Section 2. Composition/Information On Ingredients

Chemical Name	CAS#	Applicable Exposure Limits		
		OSHA	ACGIH	Other
Nitrocellulose	9004-70-0	Not Established	Not Established	
Nitroglycerine	55-63-0	0.2 ppm C (Skin*)	0.05 ppm TLV (Skin*)	
Diphenylamine	122-39-4		10 mg/m ³	

Section 3. Hazard Identification

Emergency Overview

DANGER! EXTREMELY FLAMMABLE - EXPLOSIVES.

ACCIDENTAL FIRE OR EXPLOSION IS LIKELY TO CAUSE SEVERE INJURY OR DEATH.
DUST MAY CAUSE MODERATE TEMPORARY EYE, SKIN, RESPIRATORY, OR THROAT IRRITATION

Section 3. Hazard Identification Continued

Eye:	Avoid contact with eyes
Skin:	Remove contaminated clothing promptly and clean thoroughly before reuse. Destroy and discard contaminated leather articles.
Ingestion:	Wash thoroughly after handling, and before eating, drinking, or smoking. Avoid contamination of food, beverages, or smoking materials.
Inhalation:	Avoid breathing dust, vapor, or mist.

Section 4. First Aid Measures

Cancer Information: NTP:No OSHA:No IARC:No

Eye:	In case of contact, immediately flush with plenty of low-pressure water for at least 15 minutes. Remove any contact lenses to ensure thorough flushing. Call a physician.
Skin:	Wash with running water.
Ingestion:	If conscious, the person should immediately drink large quantities of liquid to dilute this product. Induce vomiting. Call a physician. NEVER give liquids to an unconscious person. NEVER induce vomiting in an unconscious person.
Inhalation:	Remove to fresh air. If breathing has stopped, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
Doctor Notes:	

Section 5. Fire Fighting Measures

Flammable Limits:	LEL: NA	UEL: NA
Hazardous Decomposition Products:	None anticipated under normal or recommended handling and storage conditions.	
Extinguishing Media:	Deluge with large quantities of water as quickly as possible by automatic sprinklers or fire hose from a protected location. Materials are self-oxidizing.	

Section 6. Accidental Use Measures

Spills and Leaks:	Clean up spills immediately using soft bristle brush and conductive rubber or plastic shovel. Use caution, material is sensitive to initiation from sources such as heat, flame, shock, friction or sparks.
Waste Disposal:	Burn in the open, in an isolated location in small, shallow piles not over one inch deep. Quantity burned at any one time should not exceed one pound. Use an ignition train of slow-burning combustible material to permit retreat to a safe distance before powder is ignited. Stay upwind. Do not breathe products of combustion. Disposal must be in accordance with local, state and federal regulations.

Section 7. Handling Information

Recommended storage: 21 C (70 F). Store only in Department of Transportation approved containers. For handling and storage requirement see 29 CFR 1910.109. Also see "Properties and Storage of Smokeless Powder" published by the SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE, INCORPORATED (SAAMI), Flintlock Ridge Office Center, 11 Mile Hill Rd., Newtown, CT 06470-2359. Do not store smokeless powder in the same area with solvents, flammable gases or highly combustible materials. This product may react with acids, alkalies, or amines and should not be stored near such materials. Avoid exposure to sunlight or artificial ultraviolet light. Do not keep deteriorated or salvaged powders. Check old powders for deterioration regularly. Destroy deteriorated powders immediately.

Section 8. Exposure Control Measures

Respiratory Protection:	Appropriate respiratory protection is required when exposure to airborne contaminants may exceed acceptable limits. Respirators should be selected and used in accordance with OSHA, Subpart I (29 CFR 1910.134) and manufacturer's recommendations.
Hand Protection:	Impervious gloves
Eye Protection:	Safety glasses
Ventilation:	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
Additional Work Practices	DO NOT smoke in areas where powder is stored or used. Material is shock sensitive. Use care in handling. Keep away from ignition sources. Friction can cause ignition. Eyewash fountains and safety showers should be easily accessible. Prevent build-up of static electric charges. Eliminate ignition sources and prevent build-up of static electric charges. Use spark-proof tools and explosion-proof equipment.

Wetting work area with water will greatly reduce hazards. Completely remove product from area, and thoroughly clean all equipment, piping, or vessels before beginning maintenance or repairs.
A work permit system is recommended for any hot work.

Section 9. Physical And Chemical Properties

Boiling Point:		Solubility:	Negligible @ 20°C
Melting Point:		Specific Gravity:	1.5
Vapor Pressure:	Negligible @ 20°C	pH:	
Vapor Density:		Odor:	Odorless
Appearance:			

Section 10. Stability and Reactivity

Stability:	Stable under recommended handling and storage conditions.	Incompatibilities:	Acids, oxidizing agents, alkalis and amines and strong sunlight or ultraviolet light.
Conditions to Avoid:	Avoid impact, friction, heat, sparks, or flame. Avoid conditions that generate dust. This product may form flammable dust-air mixtures. Avoid emptying package in or near flammable vapors. Static charges may cause flash fire.		

Section 11. Toxicological Information

Reported Human Effects:	COMPONENT - Nitroglycerin: The following effects have been reported following medicinal usage or overdosage: faintness, skin flush, palpitation, rapid heart beat, dizziness, abdominal pain, retrosternal discomfort, muscle twitches, Heinz bodies, methemoglobinemia, depression, confusion, skin irritation, and allergic reaction. Alcohol may intensify effects.
	COMPONENT Æ Diphenylamine: Excessive exposure to the dust by inhalation has been reported to cause bladder damage, rapid heart beat, increased blood pressure, and skin rash.
Reported Animal Effects:	No animal toxicity studies have been carried out with this product. COMPONENT - Nitroglycerin: Methemoglobinemia and fibrous tissue formation in the bile ducts were seen at very high doses (many times the TLV). Testicular effects were seen in rats dosed for 3 months at very high doses (many times the TLV). In lethal dose determinations in rats, rapid breathing, poor muscle tone, raised hair, and excessive activity were seen.
	COMPONENT Æ Diphenylamine: Reported to cause adverse liver, kidney, and spleen changes, and anemia in long-term rat feeding studies at up to 1% in the diet. Dietary levels of 0.5% in male and female rats for two generations caused no reproductive or teratogenic

	effects, but did cause decreased litter sizes.
Reproductive Effects:	No studies on reproductive effects have been carried out with this product.
Mutagenicity Effects	No mutagenicity studies have been carried out with this product.

Section 12. Ecological Data

No ecological studies have been carried out with this product.

Section 13. Disposal Considerations

Disposal of explosive should be carried out under the direct supervision of a qualified person. Call New River Energetics for assistance if needed. For industrial disposal, federal hazardous waste regulations allow open burning of explosive wastes in permitted facilities. Burn in the open in an isolated location in small, shallow piles not over one inch deep. Stay upwind. Do not breathe products of combustion. State or local regulations may be more stringent than federal regulations. For disposal of small quantities, contact state or local environmental agencies for options

Section 14. Transportation Information

U.S. DOT Proper Shipping Name:	Powder Smokeless	Smokeless powder for small arms [100 lbs or less]
UN ID No.:	UN0161	NA3178
Class & Division:	1.3C	4.1
Packing Group.:	Fiber Drum	4G Fiberboard Box
*ERG Page:		

*Latest edition of the U.S. Department of Transportation's Emergency Response Guidebook
Section 15. Regulatory Information
Environmental:

Chemical Name	EPCRA 313	EPCRA 302	302 TPQ (lbs.)	302 RQ (lbs.)	CERCLA Report (lbs.)
Nitroglycerin	NA	NA	10 lbs	Yes	D001/P081
Diphenylamine	NA	NA	NA	Yes	NA

Section 16. Information Sources

This MSDS has been prepared from information obtained from one or more of the following: the manufacturer of the components, ACGIH TLV Documentation, NIOSH/OSHA Health Guidelines for Chemical Hazards, Patty's Industrial Hygiene and Toxicology Series, the NTP Annual Report on Carcinogens, and applicable International Agency For Research on Cancer (IARC) monographs. The information contained herein has been researched by Alliant Techsystems' Industrial Hygienist based upon current available scientific information and component manufacturer's data. Abuse or unforeseen circumstances are not addressed here. Information may be developed from time to time which may render the conclusions of the MSDS obsolete. Alliant Techsystems makes no warranties to its' agents, employees, or contractors as to the applicability of this information to the user's intended purpose or for consequences for its use or misuse. Corporate MSDS Template Version I.doc ANSI Z-400.19983/20/2002 Corporate MSDS Template Version I.doc ANSI Z-400.19983/20/2002

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SECTION I - PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: ~~RED PAC 20 OF BK~~

CAS NUMBER: MIXTURE

EC NUMBER: MIXTURE

MANUFACTURER: ~~RTP COMPANY~~
580 EAST FRONT STREET
WINONA MN 55987Information Phone: 1-507-454-6900
Emergency Phone: 1-507-454-6900PREPARED BY: MARI MUELLER
DAVID SCHNEIDERMSDS COORDINATOR
MSDS MANAGER

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT CLASS: NYLON 6

CHEMICAL NAME AND SYNONYMS: Nylon 6, Polyamide 6,
~~Polycaprolactam~~

HAZARDOUS INGREDIENTS	CAS #	WEIGHT %	EXPOSURE LIMITS ACGIH/TLV OSHA/PEL	VP mmHG
--------------------------	----------	-------------	---------------------------------------	------------

*** All components of this product are either listed on or exempt from listing on the TSCA Inventory.

(No hazardous ingredients subject to reporting under the Toxic Chemical Release Inventory (SARA 313) are known at this time.)

SECTION III - HAZARDS IDENTIFICATION

HAZARD RATINGS: Health: 0 Fire: 1 Reactivity: 0 PFI: A

PERMISSIBLE EXPOSURE LEVEL:

This is a polymeric compound. All ingredients are encapsulated by the polymer and present no likelihood of exposure under normal conditions of processing and handling.

EFFECTS OF OVEREXPOSURE:

ACUTE OR IMMEDIATE EFFECTS:

INGESTION: Not a probable route of exposure.

SKIN: Pellets are not likely to cause irritation.

Contact with molten material may cause thermal burns.

Processing fumes may cause irritation.

EYE: Solid/dust may cause irritation due to mechanical action.

Processing fumes may cause irritation.

(cont.)

SECTION III - HAZARDS IDENTIFICATION (cont.)

EFFECTS OF OVEREXPOSURE: (cont.)

INHALATION: Processing fumes may cause irritation to the respiratory tract.
CHRONIC EFFECTS: None known for this compound.

SECTION IV - FIRST AID MEASURES

FIRST AID:

EYES: Flush with water. Consult physician if symptoms persist.
SKIN: Wash with soap and water. For thermal burns, immediately flush with cold water. Do not attempt to remove polymer from skin. Obtain medical attention.
INHALATION: Leave exposed area and seek fresh air. If irritation persists seek medical attention.

SECTION V - FIREFIGHTING MEASURES

FLAMMABILITY CLASS: 1 **FLASH POINT:** None **LEL:** None **UEL:** None

EXTINGUISHING MEDIA:

Water spray and foam. Water spray is preferred.
Dry chemical and CO2 are not generally recommended due to their lack of cooling capacity which may allow re-ignition.

SPECIAL FIREFIGHTING PROCEDURES:

Persons exposed to products of combustion should wear NIOSH approved self contained breathing apparatus and full protective equipment.

UNUSUAL FIRE & EXPLOSION HAZARDS:

This compound has no unusual fire or explosion hazards.

SECTION VI - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Spilled pellets may cause a slipping hazard. Sweep area as needed.

SECTION VII - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store in a dry, sprinkler equipped warehouse.
(cont.)

SECTION VII - HANDLING AND STORAGE (cont.)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: (cont.)

Product as shipped is not a combustible dust. Mechanical handling can cause the formation of dusts. To reduce the risk for dust explosion do not permit dust to accumulate.

OTHER PRECAUTIONS:

Proper purging and shut down procedures should be followed to avoid overheating of this compound.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION:

A NIOSH approved respirator is recommended for protection against processing fumes, or from dust generated from grinding, sanding, or sawing operations.

VENTILATION:

Local exhaust is preferred.

PROTECTIVE GLOVES:

Canvas or cotton gloves are recommended.

EYE PROTECTION:

Safety glasses with side shields are recommended.

OTHER PROTECTIVE EQUIPMENT:

None.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE: None

EVAP. RATE: Unavailable

VAPOR DENSITY: Non Volatile

SPECIFIC GRAVITY: 1.28

VOLATILES: volume %: N/AP weight %: N/AP

APPEARANCE: Cylindrical Pellets No Odor

SECTION X - STABILITY AND REACTIVITY

STABILITY:

Unstable

Stable

HAZARDOUS POLYMERIZATION:

May Occur

Will Not Occur

INCOMPATIBILITY:

Strong acids, bases, and oxidizing agents.

CONDITIONS TO AVOID:

Avoid temperatures above 300 C (572 F).

SECTION X - STABILITY AND REACTIVITY (cont.)

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon monoxide, carbon dioxide, ammonia, and trace amounts of aldehydes and hydrogen cyanide.

SECTION XI - TOXICOLOGICAL INFORMATION

TOXICITY DATA:

No specific toxicological information is available.

SECTION XII - ECOLOGICAL INFORMATION

ECOTOXICITY:

No specific ecological information is available. This material is considered to be non-biodegradable.

SECTION XIII - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

The pellets, regrind, and purge of this material are non-hazardous and may be discarded in accordance with state, federal, and local regulations.

SECTION XIV - TRANSPORT INFORMATION

D.O.T. SHIPPING INFORMATION:

Not regulated under US Department of Transportation.

SECTION XV - REGULATORY INFORMATION

SARA TITLE III SECTION 313:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right To Know Act of 1986 and of 40 CFR 372:

NONE

SECTION XVI - OTHER INFORMATION

MSDS DISCLAIMER

RTP Company believes that the information contained herein is accurate as of the date hereof. HOWEVER, NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREIN AS TO THE INFORMATION PROVIDED OR THE PRODUCT TO WHICH THE INFORMATION REFERS. The health and safety precautions contained herein may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. Nothing contained herein shall be construed as a license for the use of any product in a manner that would infringe existing patents.

SECTION I - PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: RTP PA66 33 GF BLK
CAS NUMBER: MIXTURE
EC NUMBER: MIXTURE

MANUFACTURER: RTP COMPANY
580 EAST FRONT STREET
WINONA MN 55987

Information Phone: 1-507-454-6900
Emergency Phone: 1-507-454-6900

PREPARED BY: MARI MUELLER
DAVID SCHNEIDER

MSDS COORDINATOR
MSDS MANAGER

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT CLASS: NYLON 6/6

CHEMICAL NAME AND SYNONYMS: Polyamide 6,6, Nylon 6,6,
Polyhexamethylene adipamide, PA.

HAZARDOUS INGREDIENTS	CAS #	WEIGHT %	EXPOSURE LIMITS		VP mmHG
			ACGIH/TLV	OSHA/PEL	

*** All components of this product are either listed on or exempt
from listing on the TSCA Inventory.

(No hazardous ingredients known at this time.)

SECTION III - HAZARDS IDENTIFICATION

HAZARD RATINGS: Health: 0 Fire: 1 Reactivity: 0 PPI: A

PERMISSIBLE EXPOSURE LEVEL:

This is a polymeric compound. All ingredients are encapsulated
by the polymer and present no likelihood of exposure under
normal conditions of processing and handling.

EFFECTS OF OVEREXPOSURE:

ACUTE OR IMMEDIATE EFFECTS:

INGESTION: Not a probable route of exposure.

SKIN: Pellets are not likely to cause irritation.

Contact with molten material may cause thermal burns.

Processing fumes may cause irritation.

EYE: Solid/dust may cause irritation due to mechanical action.

Processing fumes may cause irritation.

INHALATION: Processing fumes may cause irritation to the

(cont.)

SECTION III - HAZARDS IDENTIFICATION (cont.)

EFFECTS OF OVEREXPOSURE: (cont.)

respiratory tract.

CHRONIC EFFECTS: None known for this compound.

SECTION IV - FIRST AID MEASURES

FIRST AID:

EYES: Flush with water. Consult physician if symptoms persist.

SKIN: Wash with soap and water. For thermal burns, immediately flush with cold water. Do not attempt to remove polymer from skin. Obtain medical attention.

INHALATION: Leave exposed area and seek fresh air. If irritation persists seek medical attention.

SECTION V - FIREFIGHTING MEASURES

FLAMMABILITY CLASS: 1 FLASH POINT: None LEL: None UEL: None

EXTINGUISHING MEDIA:

Water spray and foam. Water spray is preferred.

Dry chemical and CO2 are not generally recommended due to their lack of cooling capacity which may allow re-ignition.

SPECIAL FIREFIGHTING PROCEDURES:

Persons exposed to products of combustion should wear NIOSH approved self contained breathing apparatus and full protective equipment.

UNUSUAL FIRE & EXPLOSION HAZARDS:This compound has no unusual fire or explosion hazards.

SECTION VI - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:Spilled pellets may cause a slipping hazard. Sweep area as needed.

SECTION VII - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store in a dry, sprinkler equipped warehouse.

Product as shipped is not a combustible dust. Mechanical
(cont.)

SECTION VII - HANDLING AND STORAGE (cont.)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: (cont.)

~~handling can cause the formation of dusts. To reduce the risk for dust explosion do not permit dust to accumulate.~~

OTHER PRECAUTIONS:

Proper purging and shut down procedures should be followed to avoid overheating of this compound.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION:

A NIOSH approved respirator is recommended for protection against processing fumes, or from dust generated from grinding, sanding, or sawing operations.

VENTILATION:

Local exhaust is preferred.

PROTECTIVE GLOVES:

Canvas or cotton gloves are recommended.

EYE PROTECTION:

Safety glasses with side shields are recommended.

OTHER PROTECTIVE EQUIPMENT:

None.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE: None

VAPOR DENSITY: Non Volatile

EVAP. RATE: Unavailable

SPECIFIC GRAVITY: 1.39

VOLATILES: volume %: N/AP weight %: N/AP

APPEARANCE: Cylindrical Pellets No Odor

SECTION X - STABILITY AND REACTIVITY

STABILITY:

[] Unstable

[x] Stable

HAZARDOUS POLYMERIZATION:

[] May Occur

[x] Will Not Occur

INCOMPATIBILITY:

Strong acids and oxidizing agents.

CONDITIONS TO AVOID:

Avoid temperatures above 340 C (644 F).

SECTION X - STABILITY AND REACTIVITY (cont.)

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon monoxide, carbon dioxide, ammonia, and trace amounts of aldehydes and hydrogen cyanide.

SECTION XI - TOXICOLOGICAL INFORMATION

TOXICITY DATA:

No specific toxicological information is available.

SECTION XII - ECOLOGICAL INFORMATION

ECOTOXICITY:

No specific ecological information is available. This material is considered to be non-biodegradable.

SECTION XIII - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

The pellets, regrind, and purge of this material are non-hazardous and may be discarded in accordance with state, federal, and local regulations.

SECTION XIV - TRANSPORT INFORMATION

D.O.T. SHIPPING INFORMATION:

Not regulated under US Department of Transportation.

SECTION XV - REGULATORY INFORMATION

SARA TITLE III SECTION 313:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right To Know Act of 1986 and of 40 CFR 372:

NONE

SECTION XVI - OTHER INFORMATION

MSDS DISCLAIMER

RTP Company believes that the information contained herein is accurate as of the date hereof. HOWEVER, NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREIN AS TO THE INFORMATION PROVIDED OR THE PRODUCT TO WHICH THE INFORMATION REFERS. The health and safety precautions contained herein may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. Nothing contained herein shall be construed as a license for the use of any product in a manner that would infringe existing patents.



COMPANY

PRODUCTS

CORPORATION

CONTACT

HOMEPAGE

Contact Information:

Import & Export Department

Mr. Senmen Peng
Project Manager

Ms. Bonnie Zhong
Project Manager

Mr. John Xie
Project Manager

TEL : 0086-769-8828369

FAX: 0086-769-8822342, 8827237

E-mail: szgdzchg@pub.dgnet.gd.cn

Address: Guangdong Zhongcheng Chemicals
Co., Ltd., Machong Town Dongguan City ,
Guangdong Province, China.

Post Code: 511778

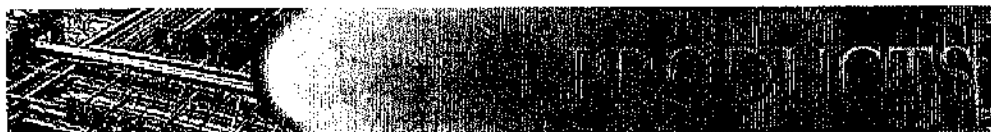
North & South America Agent:
**For a distributor near you, please contact Zhongcheng North
America, Wang Trading Enterprises, Inc. , Texas, USA.**
TEL: 713-664-8840 FAX: 713-664-8842
E-mail: wangt@pdq.net

China Station: <http://zhongchengchemicals.com>



● The Production area of

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MATERIAL SAFETY DATA SHEET - Sodium Hydrosulfite

MADE BY GUANGDONG ZHONGCHENG CHEMICALS CO.LTD.,
DONG GUAN, GUANGDONG, CHINA
EMERGENCY PHONE NUMBER: 0086-769-8822410

Preparation Date: 8/31/94

SECTION I PRODUCT IDENTIFICATION

PRODUCT NAME : SODIUM HYDROSULFITE
 SYNONYMS: Sodium dithionite; Sodium sulfoxylate; Dithionous acid, disodium salt
 Chinese dangerous goods No: 42012
 CAS NUMBER: 7775-14-6
 UN No: 1384
 RTECS No: JP2100000
 IMDG Page: 4262

HAZARD RATING :

HEALTH	3	0	LEAST
FIRE	1	1	SLIGHT
REACTIVITY	2	2	MODERATE
OTHER		3	HIGH
		4	EXTREME

HAZARD RATING METHOD : NFPA

SECTION II PRECAUTIONARY STATEMENT

WARNING:

Flammable! May spontaneously ignite in moist air or upon contact with water. Causes severe irritation to the skin, eyes and mucous membranes. May cause allergic skin reaction. Keep away from heat, sparks and open flames. Store in tightly closed containers. Wear impervious gloves, goggles and protective clothing when handling this product. Avoid breathing dust. Wash thoroughly after handling.

SECTION III INGREDIENTS

Description	%	CAS No	Exposure Limit
Dithionous acid, disodium salt	>88	7775-14-6	Not established

SECTION IV FIRE AND EXPLOSION DATA

FLASH POINT: Not Applicable
 AUTOIGNITION TEMP: 250 C

EXTINGUISHING MEDIA: Carbon dioxide, dry sand or large quantities of water

SPECIAL PROCEDURES:

Wear full protective clothing and self-contained breathing apparatus with face-piece. Avoid use of water unless sufficient amounts are available for flushing all involved product. Decomposition/combustion products may include fumes such as sulfur dioxide. This product, upon contact with water, forms sulfuric acid.

EXPLOSION HAZARDS:

Decomposes violently at 374 F(190 C). Reacts violently with oxidants resulting in combustion or explosion. If exposed to a little water or to moisture, may be self-heating and even exploding.

UPPER EXPLOSION LIMIT: Unavailable
LOWER EXPLOSION LIMIT: Unavailable
SENSITIVITY/SPARKS: Unknown
SENSITIVITY/STATIC ELECTRICITY: Unknown

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SECTION V PHYSICAL PROPERTIES

APPEARANCE: White, crystalline powder
ODOR THRESHOLD: Slight irritative
SPECIFIC GRAVITY: Unavailable
VAPOR PRESSURE (mm Hg): Nil
MELTING POINT: >300 C (Decomposes)
INITIAL BOILING POINT: Decomposes
EVAPORATION RATE: Nil
 (Ethyl Ether = 1)
SOLUBILITY IN WATER: Soluble
BULK DENSITY: ~0.9
VOLATILE % : Nil
pH: 5-6
pH TEST-METHOD: pH test paper

SECTION VI HEALTH INFORMATION

SKIN: Causes severe irritation, even burns after prolonged contact. May cause allergic skin reaction.
EYES: Causes severe irritation. May result in permanent eye damage.
SWALLOWING: Causes severe irritation to mucous membranes.
BREATHING: Inhalation of dust can cause irritation of the upper respiratory tract.
CARCINOGENICITY: This product is not listed in IARC Monographs, the NTP Annual Report or the current ACGIH TLVs as a carcinogen or potential carcinogen. It is not regulated by OSHA as a carcinogen.

SECTION VII FIRST AID PROCEDURES

BREATHING: If affected, move to fresh air. If breathing has stopped, give artificial respiration and call a physician.

SKIN CONTACT: Thoroughly wash exposed area with lots of soap and water. If irritation persists or if open sores develop, contact a physician. Remove contaminated clothing and launder before re-use.

EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Get medical attention. Do not use any chemical antidote.

SWALLOWING: If conscious, give two large glasses of water and induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION VIII REACTIVITY INFORMATION

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INCOMPATIBILITIES: Have strong oxidizing properties and can be oxidized if exposed to air. Avoid contact with acids, water and moist air. Avoid excessive heat.

DECOMPOSITION: Decomposition compounds include toxic fumes such as sulfur dioxide. Contact with water results in the formation of sulfurous acid.

HAZARDOUS POLYMERIZATION: Can not occur.

STABILITY: Stable under normal conditions. Violent decomposition may result if product is heated to 374 F (190 C).

SECTION IX UNINTENTIONAL RELEASE INFORMATION

SPILL AND LEAK PROCEDURE: Eliminate all ignition sources (heat, spark, flames, etc.). Persons not wearing protective equipment should be excluded from area of the spill until clean-up has been completed. Keep away from water or drains. Shovel spilled material into containers. Thoroughly sweep up residual material, wash the spill site.

WASTE DISPOSAL: This product, if disposed of, is an ignitable waste (D001) under current RCRA regulations.

SECTION X PERSONAL PROTECTION

RESPIRATORY PROTECTION: A NIOSH/MSHA approved respirator is recommended during operations which generate dust.

SKIN PROTECTION: Wear protective gloves such as Neoprene.

EYE PROTECTION: Chemical goggles in compliance with OSHA regulation are advised, however, OSHA may also permit other types of safety glasses.

OTHER PROTECTION: Impervious clothing and boots are recommended. Provide sufficient ventilation to maintain exposure below level of over-exposure.

SECTION XI STORAGE, HANDLING & TRANSPORTATION

STORAGE: Keep in closed or covered containers when not in use. Store in cool place with adequate ventilation. Do not store near oxidants, acids or combustible materials.

HANDLING: Exercise caution when handling contents of the container. Wash hands with soap and water before eating, drinking, smoking or using toilet facilities. When possible, use mechanical means to move large and/or heavy objects to help prevent injury.

back injuries.

TRANSPORTATION: Sodium dithionite, 4.2 (spontaneously combustible), U
PG II

SECTION XII ADDITIONAL INFORMATION

SARA requires submission of annual reports of release of toxic chemicals that in 40 CFR 372. Components present in this product at a level which could require reporting under the statute are: None

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The product information contained herein is believed to be accurate as of the date of the Material Safety Data Sheet, and is provided without warranty, expressed or implied, as to the results of this information or the product to which it relates. Recipient assumes all responsibility for the use of this information and the use (alone or in combination with any other product), storage or disposal of the product, including any resultant personal injury or property damage.

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CALGON CARBON CORP -- ACTIVATED CARBON 31025 -- 4610-00-363-5770

===== Product Identification =====

Product ID:ACTIVATED CARBON 31025
 MSDS Date:11/01/1982
 FSC:4610
 NIIN:00-363-5770
 MSDS Number: BJFNZ
 === Responsible Party ===
 Company Name:CALGON CARBON CORP
 Address:120 E OGDEN AVE
 City:HINSDALE
 State:IL
 ZIP:60521-3579
 Country:US
 Info Phone Num:312-787-6789
 Emergency Phone Num:312-787-6700
 CAGE:1DA66

=== Contractor Identification ===

Company Name:BARNSTEAD/THERMOLYNE CORP, DIV OF SYBRON CORP
 Address:2555 KERPER BLVD
 Box:City:DUBUQUE
 State:IA
 ZIP:52001-1461
 Country:US
 Phone:800-446-6060/ FAX: 319-589-0516
 CAGE:05852
 Company Name:CALGON CARBON CORPORATION
 Address:400 CALGON CARBON DR
 Box:717
 City:PITTSBURGH
 State:PA
 ZIP:15230-0717
 Country:US
 Phone:412-787-6700
 CAGE:1DA66

===== Composition/Information on Ingredients =====

Ingred Name:CARBON

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:INHAL:CARBON DUST MAY CAUSE TEMPORARY
 RESPIRATORY DISCOMFORT.
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:INHALE:RESPIRATORY DISCOMFORT.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:EYE:FLUSH WITH COPIOUS QUANTITIES OF WATER FOR 15 MINUTES,
 CALL MD. SKIN:WASH THOROUGHLY WITH WATER. INHALE:REMOVE TO FRESH
 AIR, GET MD. INGEST:GET MD.

===== Fire Fighting Measures =====

Extinguishing Media: DRY CHEMICAL, CO*2, WATER SPRAY, FOAM, WATER FOG OR SAND/EARTH.

Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard: NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures: VACUUM OR SWEEP UP SPILLED MATERIAL; AVOID CREATING DUST. CONSIDER POTENTIAL HAZARDS OF ANY ABSORBED MATERIAL BEFORE DISPOSAL.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions: KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. STORE IN DRY PLACE. DO NOT ENTER VESSELS CONTAINING ACTIVATED CARBON BEFORE CHECKING OXYGEN LEVEL.

Other Precautions: IF NECESSARY, USE NIOSH/MSHA APPROVED SCBA. ELECTRICAL EQUIPMENT SHOULD BE PROTECTED FROM CARBON DUSTS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation: NORMAL TO MAINTAIN DUST BELOW TLV (10MG/M*3).

Protective Gloves: NONE REQUIRED.

Eye Protection: CHEMICAL WORKERS GOGGLES.

Other Protective Equipment: NONE REQUIRED.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

THIS IS NOT A KIT. THIS IS PART C OF A THREE PART SINGLE PRODUCT.

===== Physical/Chemical Properties =====

Spec Gravity: 1.8-2.1

pH: 5.-8.

Appearance and Odor: BLACK GRANULES, ODORLESS

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
NONE SPECIFIED BY MANUFACTURER.

Stability Condition to Avoid: CO*2, CO

Hazardous Decomposition Products: CO*2, CO

===== Disposal Considerations =====

Waste Disposal Methods: DISPOSAL OF MATERIAL, ITS RINSINGS OR SPILL RESIDUES MUST BE I/A/W FEDERAL, STATE AND LOCAL REGULATIONS.

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particular situation.

Material Safety Data Sheet
(In compliance with CFR 1910.1200 and WHMIS)

HMIS rating
2 - Health
1 - Flammability
0 - Reactivity

Section 1 - Chemical Product and Company Identification

Trade Name: Austin Black[®], a ground coal product. Austin Black is a registered trade name of Coal Fillers Incorporated.

Product type: Bituminous Coal

Product Chemical Name: Bituminous Coal, a naturally occurring mineral

Chemical Family: Carbon

Product Trivial Name: Ground coal filler

Manufacturer: Coal Fillers Incorporated
State Route 640, Bluefield, VA 24605
Emergency Telephone No: (276) 322-4675

Prepared by: Health, Safety, and Environmental

Issue Number: 2

Date revised: February 26, 2004

Previous revision date: December 1998

Reason for revision: Change HMIS Health Rating from 1* to 2. Change information on Silica/Quartz in Sections 3, 10, and 11, to reflect changes in NTP and IARC requirements.

Section 2 - Composition/Information on Hazardous Ingredients

Substance Name	C.A.S. Number	% by Weight
Bituminous Coal	Not Applicable	90 - 100
Silica (Quartz)	14808-60-7	0.1 - 1.0

Section 3 - Hazards Identification

Physical Hazards: Combustible black powder. Releases COx SOx and Methane when burning. Not easily extinguished when burning.

Health effects:

- **Inhalation** – Temporary discomfort to upper respiratory tract may occur due to inhalation of high dust levels well above the 8 hour occupational exposure limit. Long term inhalation of coal dust may lead to pneumoconiosis.
- **Skin** – No adverse effects expected.
- **Ingestion** – No adverse effects expected
- **Eyes** – Not identified as an irritant. High dust concentrations may cause mechanical irritation.
- Ground bituminous has been evaluated by IARC as a Group 3: Unclassifiable as to *carcinogenicity to humans*. Ground bituminous coal may contain up to 1.0% Silica (Quartz) which has been evaluated by IARC as a Group 1: *Carcinogenic to humans*. The NTP has not classified bituminous coal as to its carcinogenicity, but has classified Silica (Quartz) as a NTP-K: *Known to be a human carcinogen*. See Sections 10 and 11 for further information. .

Section 4 - Fire Fighting Measures

Extinguishing Media: Water spray (FOG), or CO₂, is best extinguishing medium for small fires.

Unsuitable Media: Water stream.

Lower Explosive Limit
Unknown
Flammability
Classification
Combustible Solid

Upper Explosive Limit
Unknown
Flame Propagation
in Air
Slow burning solid

Flash Point
Not Applicable
Ignition in Air
Above 1300°F
(704°C)

Fire Fighting Instructions:

Normal fog nozzle water application and/or exclusion of air.

Combustion Hazards:

COx SOx and Methane.

Protective Equipment:

Normal fire fighting equipment with appropriate respirator for COx SOx and Methane.

Unusual Fire Hazards:

It may not be noticed that the product is burning unless it is stirred and sparks are apparent. Material that has been on fire should be watched closely to insure that no smoldering material is present.

Dust Explosion Potential:²

When high dust concentrations exist and a significant energy source is applied tests have determined that dust clouds and layers of 200 mesh (0.075 mm) coal dust and an air mixture can explode.

Minimum Ignition Temperature cloud > 1200°F (649°C)

Sensitivity to Impact: Minimum Ignition Temperature layer>350°F(177°C)
Not applicable

Sensitive to Static Charge: Not applicable

1 Anon, Steam, It's Generation and Use, The Babcock and Wilcox Co., New York, 1955, pp. 2-15.
2 Schrecengost, H.A. and Childers, "Fire and Explosion Hazards in Fluidized-Bed Thermal Coal Dryers," Circular No. 8258, US Bureau of Mines 1965.

Section 5 - Accidental Release Measures

Personal Precautions: Wear appropriate respiratory protection for the dust levels anticipated, see Section 10.

Spill Cleanup Measures: In order to minimize dust, spills should be removed by vacuuming, or by lightly spraying with water and sweeping mixture into a suitable container. Do not dry sweep.

Environmental Precautions: Ground coal is not a hazardous waste. Dispose in a landfill or by incineration in accordance with national and local laws and regulations.

Section 6 - Handling and Storage

Handling and Storage Precautions:

- Prevent exposure to high temperatures and flames.
- Prevent exposure to strong oxidizers.
- Store in a dry clean area.

Hygienic Practices: Avoid creating dust. Clean up all spills promptly. Wash exposed skin daily. Wash work clothes daily.

Section 7 - First Aid Measures

Inhalation: In case of discomfort, remove the exposed individual to fresh air.

Skin: Not hazardous. Wash exposed skin for hygienic purposes.

Ingestion: Not hazardous. Symptomatic treatment is recommended.

Eyes: Treat symptomatically for irritation. Flush lightly with water to remove the dust.

Section 8 - Physical and Chemical Properties

Physical State Solid Powder	Color Brownish Black	Odor None
Odor Threshold Not Applicable	pH 7	Boiling Point Not Applicable
Evaporation Rate Not Applicable	Melting/Freezing Point Not Applicable	Percent Volatile by Volume 20% max. when heated to 950°C.
Solubility in Water Insoluble	Specific Gravity 1.31	Vapor Density Not Applicable
Vapor Pressure Not Applicable	Rapid Vapor Pressure Not Applicable	Water/Oil Distribution Not Applicable
Viscosity Not Applicable	Pour Point Not Applicable	

Section 9 - Stability and Reactivity

Chemical Stability:	Stable
Conditions to avoid:	Contact with strong oxidizers, especially when heated. High temperatures or flames.
Incompatible materials:	Strong oxidizers
Reactivity:	May react exothermically upon contact with strong oxidizers.
Hazard Decomposition:	Releases carbon monoxide, carbon dioxide (CO ₂), sulfur monoxide, sulfur dioxide (SO ₂), and Methane.
Hazard Polymerization:	Not applicable

Section 10 - Exposure Controls and Personal Protection

Inhalation Standards	Exposure Limits	Amount
----------------------	-----------------	--------

C.A.S. No.	PEL	TLV	%
Coal Bituminous C.A.S. No. Not Applicable Naturally Occurring Mineral	* 2.4mg/m ³	* 0.9mg/m ³	90 - 100
Silica (Quartz) C.A.S. No. 14808-60-7	*10mg/m ³ % SiO ₂ +2	* 0.05mg/m ³	0.1 - 1.0

* Respirable fraction <5% SiO₂

Respiratory Protection: Not required if dust levels are maintained below the PEL or TVL listed. For levels above the listed PEL and TLV an appropriate NIOSH/MSHA approved respirator should be used.

Personal Protective Equipment:

Gloves: None required.
Protective Clothing: None required. Confine work clothing to the workplace and wash daily.
Eye/Face Protection: None required.
Engineering Controls: Use sufficient ventilation in volume and pattern to maintain dust exposures below TLV.
Other Protective Measures: Wash exposed skin before eating, drinking and smoking. Wash clothing daily.

Section 11 - Toxicological Information

Routes of Exposure: Inhalation, Ingestion, Eyes, Skin contact.

Medical Conditions Aggravated: None expected. Like any nuisance dust, may aggravate certain pre-existing upper respiratory disorders, such as bronchitis or asthma.

Synergistic Materials: None expected.

Acute Effects:

Inhalation: None expected. Based on experience, temporary discomfort or mechanical irritation to upper respiratory tract may occur due to inhalation of dust concentrations well above the 8 hour TLV.

Ingestion: No adverse effects expected.

Eye: No adverse effects expected. High dust concentrations may cause mechanical irritation.

Skin: No adverse effects expected.

Chronic Effects:

Inhalation: Long term inhalation of coal dust amounts may lead to the development of pneumoconiosis.

Carcinogenicity: Coal contains a small amount of Crystalline Silica (Quartz). IARC has classified Silica (Quartz) as a Group 1, " *carcinogenic to humans*"
The National Toxicology Program, (NTP) has listed Silica (Quartz) as a (NTP-K), known to be human carcinogen
The Occupational Safety and Health Administration, (OSHA) has not classified Silica (Quartz) as to its carcinogenicity.

Ingestion: No Adverse effects expected.

Eye: No adverse effects expected.

Skin: No adverse effects expected.

OECD Test Values:

Irritancy: Not Available.

Sensitization: Not Available.

Mutagenicity: Not Available

Reproductive Toxicity: Not Available

Teratogenicity: Not Available.

Section 12 - Regulatory Information

Resource Conservation and Recovery Act, (RCRA): All metals are below the TCLP listed levels.

UN Classification: Not classified.

SARA Title III:

This product does not contain any toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-know Act of 1986 and of CFR 372.

TSCA and DSL Inventories:

This product is listed as a naturally occurring substance.

Section 13 - Other Information

Disclaimer: The information set forth above is based on information which Coal Fillers Incorporated believes to be accurate. No warranty expresses or implied, is intended. The information is provided solely for your information and consideration. Coal Fillers Incorporated assumes no responsibility for its use or reliance thereon.

[Home Page](#)

CAROLINA BIOLOGICAL SUPPLY CO -- CHARCOAL, WOOD AND ANIMAL BONE, POWDER

===== Product Identification =====

Product ID:CHARCOAL, WOOD AND ANIMAL BONE, POWDER

MSDS Date:02/02/1998

FSC:NIIN:Submitter:D RV

Status Code:A

MSDS Number: CKBKV

=== Responsible Party ===

Company Name:CAROLINA BIOLOGICAL SUPPLY CO

Address:2700 YORK RD

City:BURLINGTON

State:NC

ZIP:27215-3387

Country:US

Info Phone Num:800-227-1150

Emergency Phone Num:800-227-1150

Resp. Party Other MSDS Num.:PRODUCT CODE: 85-3780

CAGE:59896

=== Contractor Identification ===

Company Name:CAROLINA BIOLOGICAL SUPPLY CO

Address:2700 YORK RD

Box:City:BURLINGTON

State:NC

ZIP:27215-3387

Country:US

Phone:800-227-1150/910-584-0381

Contract Num:MDA414-99-P-6483

CAGE:59896

===== Composition/Information on Ingredients =====

Ingred Name:CARBON

CAS:7440-44-0

RTECS #:FF5250000

= Wt:100.

===== Hazards Identification =====

LD50 LC50 Mixture:LD50 = 440 MG/KG (RAT)

Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:EMERGENCY OVERVIEW: ~~COMBUSTIBLE SOLID~~.

POTENTIAL HEALTH EFFECT: ON CONTACT MAY CAUSE EYES OR SKIN

IRRITATION. INGESTED, MAY CAUSE GASTROINTESTINAL DISCOMFORT.

INHALED, MAY CAUSE IRRITATION TO RESPIRATORY TRACT.

Explanation of Carcinogenicity:NONE LISTED.

Effects of Overexposure:IRRITATION.

===== First Aid Measures =====

First Aid:EYE: FLUSH WITH WATER FOR AT LEAST 15 MINUTES, RAISING UPPER AND LOWER EYELIDS OCCASIONALLY. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. SKIN: THOROUGHLY WASH EXPOSED AREA FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING. LAUNDRY BEFORE REUSE. INGEST: IF CONSCIOUS, GIVE PLENTY OF WATER AND INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. CALL A

PHYSICIAN OR POISON CONTROL CENTER. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHALE: REMOVE TO FRESH AIR. GIVE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED. KEEP PERSON WARM AND QUIET.

===== Fire Fighting Measures =====

Extinguishing Media:USE DRY CHEMICAL, CARBON DIOXIDE OR APPROPRIATE FOAM.

Fire Fighting Procedures:FIREFIGHTERS SHOULD WEAR FULL PROTECTIVE EQUIPMENT AND NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire/Explosion Hazard:~~DUST PARTICLES CAN FORM EXPLOSIVE MIXTURE WITH AIR. DANGER DUE TO SPONTANEOUS HEATING WHEN WET OR TIGHTLY PACKED.~~

===== Accidental Release Measures =====

Spill Release Procedures:VENTILATE AREA OF SPILL. CLEAN-UP PERSONNEL SHOULD WEAR PROPER PROTECTIVE EQUIPMENT. ~~AVOID CREATING DUST.~~ SWEEP OR SCOOP UP AND CONTAINERIZE FOR DISPOSAL.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP CONTAINER CLOSED AND AWAY FROM HEAT, FLAMES, AND OXIDIZERS. AVOID WETTING AND SUBSEQUENT DRYING IN STORAGE.

Other Precautions:DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN OR EYES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NONE NEEDED UNDER NORMAL CONDITIONS OF USE WITH ADEQUATE VENTILATION. NIOSH APPROVED EQUIPMENT SHOULD BE WORN IF PELS ARE EXCEEDED.

Ventilation:MECHANICAL TYPE IS ACCEPTABLE. LOCAL EXHAUST IS PREFERRED.

Protective Gloves:RUBBER, NEOPRENE, PVC, OR EQUIVALENT.

Eye Protection:SPLASH PROOF CHEMICAL SAFETY GOGGLES SHOULD BE WORN AT ALL TIMES.

Other Protective Equipment:LAB COAT, EYE WASH AND SAFETY SHOWERS.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:R1

Melt/Freeze Pt:=3500.C, #####F

Solubility in Water:INSOLUBLE

Appearance and Odor:BLACK, ODORLESS, AMORPHOUS POWDER.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
OXIDIZERS.

Stability Condition to Avoid:AVOID DUSTING.

Hazardous Decomposition Products:OXIDES OF CARBON.

===== Ecological Information =====

Ecological:EPA WASTE NUMBER: D001

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE IN ACCORDANCE WITH ALL APPLICABLE
FEDERAL, STATE AND LOCAL REGULATIONS.

=====
===== MSDS Transport Information =====

Transport Information:DOT: CHARCOAL, HAZARD CLASS 4.2, NA1361, PKG III.

=====
===== Regulatory Information =====

SARA Title III Information:NOT ON SARA SEC. 313 CHEMICALS LIST.
Federal Regulatory Information:ON TSCA INVENTORY LIST.

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assume responsibility for the suitability of this information to their
particular situation.

ZIEGLER CHEMICAL & MINERAL CORP -- ZECO 19 GILSONITE -- 6810-00N056479

===== Product Identification =====

Product ID:ZECO 19 ~~GILSONITE~~
 MSDS Date:06/03/1991
 FSC:6810
 NIIN:00N056479
 MSDS Number: BWNHQ
 === Responsible Party ===
 Company Name:ZIEGLER CHEMICAL & MINERAL CORP
 Address:100 JERICHO QUAD SUITE 140
 City:JERICHO
 State:NY
 ZIP:11753
 Country:US
 Info Phone Num:516-681-9600
 Emergency Phone Num:516-681-9600
 CAGE:79525

===== Contractor Identification =====

Company Name:ZIEGLER CHEMICAL & MINERAL CORP
 Address:100 JERICHO QUAD SUITE 140
 Box:City:JERICHO
 State:NY
 ZIP:11753
 Country:US
 Phone:516-681-9600
 CAGE:79525

===== Composition/Information on Ingredients =====

Ingred Name:HYDROCARBON-BLACK SOLID; (GILSONITE)
 CAS:12002-43-6
 OSHA PEL:5 MG/M3 MFR
 ACGIH TLV:5 MG/M3 MFR

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:ACUTE/CHRONIC:NOT EXPECTED TO BE IRRIT
 TO EYES OR SKIN; HOWEVER, DUST MAY IRRIT EYES BY ABRASION. NOT
 EXPECTED TO BE IRRIT TO RESP TRACT AT AIRBORNE LEVELS BELOW
 NUISANCE PARTICULATES EXPOSURE STANDARDS OF 5 MG/M3. SIGNS &
 SYMPTOMS OF EXPOS:BRTHG LG AMTS OF NUISANCE DUST MAY CAUSE RESP
 TRACT DISCOMFORT OR IRRIT.
 Explanation of Carcinogenicity:NOT RELEVANT
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE KNOWN.

===== First Aid Measures =====

First Aid:INGEST:CALL MD IMMEDIATELY . EYES:WASH WITH FRESH WATER FOR
 AT LEAST 15 MINUTES. SKIN:WASH THOROUGHLY WITH SOAP AND WATER.
 INHAL:IF RESPIRATORY DISCOMFORT OCCURS, REMOVE TO FRESH AIR. IF
 DISCOMFORT STILL CONTINUES, SEE DOCTOR.

===== Fire Fighting Measures =====

Flash Point Method:COC
 Flash Point:SUPP DATA
 Extinguishing Media:CO*2, DRY CHEMICAL, FOAM, WATER SPRAY (FOG).
 Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL
 PROTECTIVE EQUIPMENT .
 Unusual Fire/Explosion Hazard:~~DUST IN AIR MAY BE SUBJECT TO COMBUSTION~~
~~OR EXPLOSION UPON CONTACT WITH SPARKS, OPEN FLAMES, OR TEMPERATURE~~
~~ABOVE 1000F~~

===== Accidental Release Measures =====

Spill Release Procedures:~~MOLTEN MATERIAL:ELIMINATE SOURCES OF IGNITION.~~
 LET COOL TO SOLID, SCRAPE UP. ~~POLVERIZED MATERIAL:ELIMINATE SOURCES~~
 OF IGNITION. SWEEP UP. VACUUM FOR COMPLETE REMOVAL.
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:~~KEEP DUST IN AIR TO A MINIMUM.~~ DO NOT
 STORE NEAR HIGH HEAT OR OPEN FLAMES.
 Other Precautions:IF MATERIAL IS HEATED ABOVE 500F AND LONG TERM
 EXPOSURE TO VAPORS IS ANTICIPATED, USE OF NIOSH/MSHA APPROVED
 RESPIRATORY EQUIPMENT IS RECOMMENDED.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:FOR DUST:NIOSH/MSHA APPROVED DUST RESPIRATOR OR
 NON-TOXIC FACE MASK.
 Ventilation:LOCAL EXHAUST FOR DUST REMOVAL. MECHANICAL (GENERAL):FOR
 DUST REMOVAL.
 Protective Gloves:INSULATED FOR HOT MATERIAL.
 Eye Protection:ANSI APPRVD SAFETY GLASSES .
 Other Protective Equipment:EMER EYE WASH & DELUGE SHOWER WHICH MEET
 ANSI DESIGN CRITERIA . LONG SLEEVES & CLTHG TO PROT AGAINST (SUPP
 DATA)
 Work Hygienic Practices:AVOID INHALATION OF DUST. ADHERE TO GOOD
 HYGIENIC PRACTICES.
 Supplemental Safety and Health
 FLASH PT:600F TYPICAL DUST EXPLOSIVITY LIMITS. 20 OZ/100FT.

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:>290F,>143C
 Spec Gravity:1.05 (H*2O=1)
 Evaporation Rate & Reference:N/A (BUTYL ACETATE=1)
 Solubility in Water:INSOLUBLE.
 Appearance and Odor:BLACK SOLID COLD. NO ODOR COLD. MILD ODOR HOT.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 MAY REACT WITH STRONG OXIDIZING MATERIALS.
 Stability Condition to Avoid:AUTO-IGNITION TEMPERATURE UNKNOWN. AVOID
 HEATING BEYOND 600F.
 Hazardous Decomposition Products:NORMAL COMBUSTION:CO*2, NITROGEN
 OXIDES/INCOMPLETE COMBUSTION:CO.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND
FEDERAL REGULATIONS.

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particular situation.

AMERICAN NORIT CO -- DARCO LIGNITE BASED CARBONS -- 6810-00-264-5896

===== Product Identification =====

Product ID:DARCO ~~LIGNITE~~ BASED CARBONS
 MSDS Date:10/22/1990
 FSC:6810
 NIIN:00-264-5896
 MSDS Number: BKZXY
 === Responsible Party ===
 Company Name:AMERICAN NORIT CO
 Address:420 AGMAC AVE
 City:JACKSONVILLE
 State:FL
 ZIP:32205
 Country:US
 Info Phone Num:904-783-6406
 Emergency Phone Num:904-783-6406, 904-512-4610
 CAGE:0AEA0

===== Contractor Identification =====

Company Name:AMERICAN NORIT CO
 Address:420 AGMAC AVE
 Box:City:JACKSONVILLE
 State:FL
 ZIP:32205
 Country:US
 Phone:904-783-6406, 904-512-4610
 CAGE:0AEA0
 Company Name:LOS ANGELES CHEMICAL CO
 Address:4545 ARDINE ST
 Box:1987
 City:SOUTH GATE
 State:CA
 ZIP:90280
 Country:US
 Phone:213-562-9500
 CAGE:75656

===== Composition/Information on Ingredients =====

Ingred Name:GRAPHITE, SYNTHETIC
 CAS:7440-44-0
 RTECS #:FF5250100
 Fraction by Wt: 100%
 Other REC Limits:0.7 MG/M3 RESP DUST
 OSHA PEL:15 MG/M3 TDUST
 ACGIH TLV:2 MG/M3 TDUST; 9293

===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:DUST MAY CAUSE IRRITATION TO THE EYES
 AND SKIN. INHALATION OF DUST MAY CAUSE PULMONARY TRACT PROBLEMS.
 AVOID BREATHING DUST.
 Effects of Overexposure:INH:MAY IRRIT MUC MEMB,ING:LG AMT MAY DISTRB
 GI;SKIN:NO ADVERS EFFECT;EYE:MAY IRRIT MECHANICALLY.
 Medical Cond Aggravated by Exposure:NONE KNOWN

===== First Aid Measures =====

First Aid: INHALATION: REMOVE TO FRESH AIR. GET MED HELP FOR BREATHG
DIFFICULTY. INGESTION: NOT EXPECTED TO CAUSE HARM. GET MEDICAL
ADVICE. SKIN: WASH W/SOAP & WATER. EYES: FLUSH WITH WATER FOR 15 MIN.
GET MEDICL HE LP IF IRRITATION PERSIST.

===== Fire Fighting Measures =====

Extinguishing Media: WATER OR WATER SPRAY
Fire Fighting Procedures: WEAR SELF-CONTAINED BREATHING. ~~AVOID METHODS
WHICH WILL SMR UP DUST.~~
Unusual Fire/Explosion Hazard: ~~FINE DUST IN AIR IN PRESENCE OF IGNITION
SOURCES IS A POTENTIAL DUST EXPLOSION HAZARD;~~ MIN EXPLSV LIM: 140G

===== Accidental Release Measures =====

Spill Release Procedures: RMV IGN SOURCES. VENTILATE AREA. USE
PROTECTIVE EQUIPMENT FOR DUST; ~~CLEAN UP SPILLS IN A MANNER THAT
DOES NOT DISPERSE DUST INTO AIR.~~ USE NON-SPARKING TOOLS. PICK UP
SPILLS FOR RECOVERY OR DISPOSAL & P LACE IN A CLOSED CONTAINER.
Neutralizing Agent: NONE

===== Handling and Storage =====

Handling and Storage Precautions: PROTECT AGAINST PHYSICAL DAMAGE. STORE
IN COOL, DRY WELL VNTLTD AREA ~~AWAY FROM IGN/HEAT SOURCES,~~ OXIDIZING
MATERIAL.
Other Precautions: KEEP AWAY FROM HEAT, SPARKS, FLAMES. KEEP CONTNRS
CLOSED. AVOID BREATHING DUST. WASH THOROUGHLY AFTER HNDLG.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: SCBA, SUPPLIED AIR RESPIRATOR
Ventilation: LOCAL EXHAUST TO MAINTN BELOW TLV.
Protective Gloves: IMPERVIOUS
Eye Protection: GOGGLES/FACE SHIELD
Other Protective Equipment: FULL PROTECTIVE CLOTHING, SAFETY SHOWER, EYE
WASH STATION
Work Hygienic Practices: DO NOT SMOKE IN WORK AREA.
Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC: N1
Spec Gravity: 250-600 G/L
Solubility in Water: INSOLUBLE
Appearance and Odor: FINE BLACK POWDER, ODORLESS

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
OXIDIZERS, LIQUID OXYGEN.
Stability Condition to Avoid: AVOID ELEVATED TEMPATURES, OPEN FLAMES.
Hazardous Decomposition Products: CO & CO*2 WHEN INVOLVED IN FIRE

===== Disposal Considerations =====

Waste Disposal Methods: MAY BE BURNED IN AN APPROVED INCINERATOR OR
DISPOSED IN AN APPROVED WASTE FACILITY. ENSURE COMPLIANCE WITH

LOCAL, STATE, & FEDERAL REGULATIONS. WARNING: SPENT PRODUCT MAY HAVE
ABSORBED HAZARDOUS MATERIAL.

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assume responsibility for the suitability of this information to their
particular situation.

KOPPERS CO INC -- COAL TAR PITCH -- 5610-00F025191

===== Product Identification =====

Product ID: COAL TAR PITCH
 MSDS Date: 09/01/1985
 FSC: 5610
 NIIN: 00F025191
 MSDS Number: BNZJK
 === Responsible Party ===
 Company Name: KOPPERS CO INC
 Address: 436 7TH AVE
 City: PITTSBURGH
 State: PA
 ZIP: 15219
 Country: US
 Info Phone Num: 800-556-7737
 Emergency Phone Num: 800-553-5631
 CAGE: KOPPE

=== Contractor Identification ===
 Company Name: KOPPERS CO INC
 Address: 436 7TH AVE
 City: PITTSBURGH
 State: PA
 ZIP: 15219
 Country: US
 Phone: 800-556-7737
 CAGE: KOPPE
 Company Name: KOPPERS ROOFING SERVICES
 Address: 436 7TH AVE
 Box: City: PITTSBURGH
 State: PA
 ZIP: 15219
 Country: US
 Phone: 412-227-2884
 CAGE: 0EGB7

===== Composition/Information on Ingredients =====

Ingred Name: COAL TAR PITCH (SUSPECTED A1 HUMAN CARCINOGEN BY ACGIH,
 NTP)
 CAS: 65996-93-2
 RTECS #: GF8655000
 Other REC Limits: 0.1 MG/CUM
 OSHA PEL: 200 MG/CUM
 ACGIH TLV: 0.2 MG/CUM (A1)

===== Hazards Identification =====

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES
 Reports of Carcinogenicity: NTP: YES IARC: YES OSHA: NO
 Health Hazards Acute and Chronic: EYE: IRRITATION/CORNEAL CHANGE/THERMAL
 BURN. SKIN: IRRITATION/HARMFUL/PHOTOTOXIC REACTION/CANCER/THERMAL
 BURN. INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION &
 DIFFICULTIES/CNS EFFECT/CARDIOVASCULAR COLLAPSE. INGESTION: GI
 DISTURBANCE/IRRITATION/NAUSEA/VOMITING/ABDOMINAL
 PAIN/HARMFUL/CARDIOVASCULAR INVOLVEMENT.
 Explanation of Carcinogenicity: SEE INGREDIENTS.
 Effects of Overexposure: EYE: IRRITATION/CORNEAL CHANGE/THERMAL BURN.

SKIN: IRRITATION/HARMFUL/PHOTOTOXIC REACTION/CANCER/THERMAL BURN.
 INHALATION: HARMFUL/RESPIRATORY TRACT IRRITATION & DIFFICULTIES/CNS
 EFFECT/CARDIOVASCULAR COLLAPSE. INGESTION: GI
 DISTURBANCE/IRRITATION/NAUSEA/VOMITING/ABDOMINAL
 PAIN/HARMFUL/CARDIOVASCULAR INVOLVEMENT.

Medical Cond Aggravated by Exposure:LIVER/KIDNEY/SKIN/CNS/RESPIRATORY
 DISEASES

===== First Aid Measures =====

First Aid:EYE: IMMEDIATELY FLUSH W/LARGE AMOUNTS OF WATER FOR 15 MINS.
 SKIN: WASH THOROUGHLY W/WATERLESS HAND CLEANER. FLUSH W/LARGE
 AMOUNTS OF COLD WATER. SUBMERGE AREA IN COLD WATER. PACK W/ICE.
 INHALATION: REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED OR IS
 DIFFICULT, ADMINISTER ARTIFICIAL RESPIRATION OR OXYGEN. OBTAIN
 MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Flash Point Method:COC
 Flash Point:302F
 Extinguishing Media:DRY CHEMICAL, CO2, FOAM, OR WATER SPRAY. WATER OR
 FOAM MAY CAUSE FROTHING, IF MOLTEN.
 Fire Fighting Procedures:WEAR FULL FACE APPROVED SELF-CONTAINED
 BREATHING APPARATUS. USE WATER TO COOL FIRE-EXPOSED
 CONTAINER/STRUCTURE/PROTECT PERSONNEL.
 Unusual Fire/Explosion Hazard:FIRE GIVES OFF TOXIC VAPORS. VAPORS ARE
 RELEASED/DUST MAY FORM EXPLOSIVE MIXTURES IN AIR. CLOSED CONTAINERS
 EXPLODE IN HEAT. COMBUSTIBLE AT HIGH TEMPERATURES.

===== Accidental Release Measures =====

Spill Release Procedures:SOLIDIFIED SPILL: SHOVEL INTO DRY
 CONTAINERS/COVER. FLUSH AREA W/WATER. CONTAIN RUNOFF FROM FIRE
 CONTROL/DILUTION WATER. TREAT AS A COAL SPILLAGE/RECOVER SPILLAGE.
 IF HOT LIQUID IS SPILLED, CONTAIN W/ SAND/ASHES. ALLOW TO
 COOL/SCRAPE UP/DISPOSE.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID CONTACT W/SKIN & EYES. KEEP IN A
 CLOSED, LABELED CONTAINER W/IN A COOL, WELL SHADED, DRY VENTILATED
 AREA. AVOID INHALATION OF DUSTS/VAPORS.
 Other Precautions:PROTECT FROM PHYSICAL DAMAGE. READ/UNDERSTAND MSDS.
 APPLY PROTECTIVE CREAMS BEFORE WORKING/SEVERAL TIMES DURING WORK.
 DON'T USE/STORE IN HOME. DON'T INGEST. DON'T WEAR CONTACT LENS
 W/OUT PROPER EYE PROTECTION WHEN USING PRODUCT.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE MSHA/NIOSH APPROVED COMBINATION
 FILTER/ORGANIC VAPOR CARTRIDGES OR CANISTERS. FULL-FACE PIECE
 RESPIRATORY PROTECTIVE UNITS REQUIRED.
 Ventilation:SUFFICIENT GENERAL/LOCAL EXHAUST: IN PATTERN/VOLUME TO
 CONTROL INHALATION EXPOSURES & TO KEEP <TLV.
 Protective Gloves:HEAT RESISTANT INDUSTRIAL FABRIC-TYPE
 Eye Protection:INDUSTRIAL SAFETY GLASSES, GOGGLES
 Other Protective Equipment:SIDE/FACE SHIELD/INDUSTRIAL-TYPE WORK
 CLOTHING/SAFETY FOOTWEAR/HEAT & NECK
 COVER/APRON/JACKET/PANTS/COVERALLS/BOOTS

Work Hygienic Practices:PRACTICE GOOD HYGIENE. MAINTAIN GOOD HOUSEKEEPING. WASH BEFORE EATING/DRINKING/USING TOBACCO PRODUCTS OR REST ROOMS.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:500F

Vapor Pres:1

Vapor Density:1

Spec Gravity:1.22

Evaporation Rate & Reference:(ETHER = 1): 1

Solubility in Water:NEGLIGIBLE

Appearance and Odor:BLACK SOLID W/NO ODOR AT 69.8F, AROMATIC ODOR AFTER MELTING.

Percent Volatiles by Volume:NEGL

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

Stability Condition to Avoid:EXTREME HEAT, PHYSICAL DAMAGE

Hazardous Decomposition Products:TOXIC FUMES

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF AS A HAZARDOUS WASTE ACCORDING TO LOCAL, STATE, & FEDERAL REGULATIONS. PLACE IN TIGHTLY SEALED LABELED CONTAINERS.

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SCIENTIFIC POLYMER PRODUCTS INC -- POLYACRYLAMIDE, 001 -- 9330-00N044053

===== Product Identification =====

Product ID: POLYACRYLAMIDE, 001
 MSDS Date: 08/01/1992
 FSC: 9330
 NIIN: 00N044053
 MSDS Number: BSBWP
 === Responsible Party ===
 Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Info Phone Num: 716-265-0413
 Emergency Phone Num: 716-265-0413
 CAGE: 0MUG0

===== Contractor Identification =====

Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 Box: City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Phone: 716-265-0413
 CAGE: 0MUG0

===== Composition/Information on Ingredients =====

Ingred Name: ACRYLAMIDE, POLYMERS; (POLYACRYLAMIDE)
 CAS: 9003-05-8
 RTECS #: AS3700000
 Fraction by Wt: 100%
 OSHA PEL: N/K
 ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation: YES Skin: NO Ingestion: YES
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: INHALATION OVEREXPOSURE TO VAPORS CAN
 CAUSE IRRITATION TO THE EYES, NOSE AND THROAT.
 Explanation of Carcinogenicity: NOT RELEVANT
 Effects of Overexposure: SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
 ASSISTANCE. INHAL: REMOVE FROM EXPOSURE. IF BREATHING STOPS, BEGIN
 MOUTH TO MOUTH. EYES: FLUSH WITH WATER FOR AT LEAST 15 MIN. SKIN:
 WASH AFFECTED AREA WITH SOAP AND WATER. REMOVE DIRTY CLOTHING.
 INGEST: GET MD IMMEDIATELY .

===== Fire Fighting Measures =====

Extinguishing Media:WATER, CO2, DRY CHEMICAL.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:NONE KNOWN.

===== Accidental Release Measures =====

Spill Release Procedures:SPILLED MATERIAL BECOMES VERY SLIPPERY WHEN WET. SWEEP UP AND PLACE IN CONTAINER FOR DISPOSAL.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN DRY COOL PLACE IN TIGHTLY CLOSED CONTAINER. AVOID UNNECESSARY SKIN CONTACT.

Other Precautions:THIS MATERIAL IS INTENDED FOR LABORATORY USE ONLY. IT IS NOT SOLD OR INTENDED FOR DRUG, HOUSEHOLD OR OTHER USES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF NEEDED. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL EXHAUST.

Protective Gloves:IMPERVIOUS GLOVES.

Eye Protection:ANSI APPR CHEMICAL SAFETY GOGGLES

Work Hygienic Practices:GOOD HYGIENE SHOULD BE FOLLOWED.

Supplemental Safety and Health

NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:N1

Solubility in Water:SLIGHT

Appearance and Odor:GRANULAR; ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products:CO, CO2, AMMONIA AND/OR OXIDE OF NITROGEN.

===== Disposal Considerations =====

Waste Disposal Methods:IN ACCORDANCE WITH STATE, FEDERAL AND LOCAL REGULATIONS.

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E I DU PONT DE NEMOURS & CO -- POLYMERIC ACRYLONITRILE TYPE A-7, 00000060 --
6850-00N019868

=====
Product Identification
=====

Product ID:POLYMERIC ACRYLONITRILE TYPE A-7, 00000060
MSDS Date:10/20/1988
FSC:6850
NIIN:00N019868
MSDS Number: BLKDD
=== Responsible Party ===
Company Name:E I DU PONT DE NEMOURS & CO
Address:1007 MARKET STREET
City:WILMINGTON
State:DE
ZIP:19898
Country:US
Info Phone Num:800-441-7515
Emergency Phone Num:800-441-3637;800-424-9300 (CHEMTREC)
CAGE:B0589

=====
Contractor Identification
=====

Company Name:E I DU PONT DE NEMOURS & CO
Address:RAKETSTRAAT, 100, RUE DE LA FUSEE
City:BRUSSEL
Country:BE
Phone:32-(0)15-401.505
CAGE:B0589
Company Name:E.I. DUPONT DE NEMOURS & CO
Address:1007 MARKET STREET
Box:City:WILMINGTON
State:DE
ZIP:19898
Country:US
Phone:800-441-7515;800-441-9442
CAGE:18873

=====
Composition/Information on Ingredients
=====

Ingred Name:POLYMERIC ACRYLONITRILE; (POLY(ACRYLIC ACID, METHYL
ESTER/ACRYLONITRILE)
CAS:24968-79-4
Fraction by Wt: 100%
Other REC Limits:AEL: 0.5 PPM, S
OSHA PEL:2 PPM, S
ACGIH TLV:2 PPM, S

=====
Hazards Identification
=====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:REGS FOR MONITORING & CONTROLLING
ACRYLONITRILE CONC ARE DESCRIBED IN SECTION 1045, PART 1910 OF
TITLE 29 OF CODE OF FED REGS. SOLID POLYMERS, SUCH AS POLYMERIC
ACRYLONITRILE, ARE SPECIFICALLY EXTEMPT ED FROM THESE REGS AS LONG
AS THEY ARE NOT HEATED ABOVE 170F DURING HNDLG, USE/PROCESSING. IF
THIS (SEE EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:HLTH HAZ: TEMP IS EXCEEDED, EXEMPTION WOULD

REQUIRE OBJECTIVE DATA DEMONSTRATING THAT ACRYLONITRILE
CONCENTRATION WILL NOT EXCEED THE ACTION LIMIT.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

----- First Aid Measures -----

First Aid:INHAL: IF INHALED, REMOVE TO FRESH AIR. IF NOT BRTHG, GIVE
ARTF RESP. IF BRTHG DFCLT, GIVE OXYGEN. CALL MD. SKIN: FLUSH SKIN
WITH WATER. EYE: IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES W/
PLENTY OF WA TER FOR AT LEAST 15 MINUTES. CALL MD. INGEST: IF
SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QTYS OF WATER. NEVER
GIVE ANYTHING BY MOUTH TO UNCON PERSON. CALL MD.

----- Fire Fighting Measures -----

Extinguishing Media:WATER.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL
PROTECTIVE EQUIPMENT . KEEP PERSONNEL REMOVED & UPWIND OF FIRE.

Unusual Fire/Explosion Hazard:~~DUST FORMS EXPLOSIVE MIXTURES WITH AIR.~~
HAZARDOUS GASES/VAPORS PRODUCED IN FIRE ARE HYDROGEN CYANIDE, CO,
NOX.

----- Accidental Release Measures -----

Spill Release Procedures:NOTE: ~~REVIEW FIRE & EXPLO HAZ & SAFETY PROC~~
~~BEFORE PROCEEDING W/CLEAN UP.~~ USE APPROP PERS PROT EQUIP DURING
CLEAN UP. RECOVER UNDAMAGED & MINIMALLY CONTAM MATL FOR REUSE OR
RECLAMATION. SHOVEL OR SWEE P UP.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

----- Handling and Storage -----

Handling and Storage Precautions:STORE IN WELL VENT AREA. KEEP CNTNR
TIGHTLY CLSD. DO NOT STORE OR CONSUME FOOD, DRINK OR TOBACCO IN
AREAS WHERE THEY MAY BECOME CONTAM W/MATL.

Other Precautions:USE ONLY WITH ADEQUATE VENTILATION. ~~AVOID DUST~~
~~GENERATION.~~ DO NOT MIX WITH STRONG OXIDANTS. AVOID BREATHING DUST.

----- Exposure Controls/Personal Protection -----

Respiratory Protection:NIOSH/MSHA APPROVED DUST RESPIRATOR.

Ventilation:USE ONLY WITH ADEQUATE VENTILATION.

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

% VOLAT: 1.5 (WT).

----- Physical/Chemical Properties -----

HCC:N1

Solubility in Water:INSOLUBLE

Appearance and Odor:WHITE POWDER EXTRUDED INTO "NOODLES" WITH NO ODOR.

Percent Volatiles by Volume:SUPDAT

----- Stability and Reactivity Data -----

Stability Indicator/Materials to Avoid:YES

INCOMPATIBLE WITH STRONG OXIDANTS.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:DECOMPOSES WITH HEAT. DEGRADES AT
TEMPERATURES >150C.

===== Disposal Considerations =====

Waste Disposal Methods:TREATMENT, STORAGE, TRANSPORTATION & DISP MUST
BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE/PROVINCIAL, AND
LOCAL REGS. REMOVE NONUSABLE SOLID MATL AND/OR CONTAM SOIL, FOR
DISPOSAL IN AN APPROVED A ND PERMITTED LANDFILL.

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document should seek competent professional advice to verify and
assume responsibility for the suitability of this information to their
particular situation.

SIGMA CHEMICAL CO -- C4888, CARBOXYMETHYL CELLULOSE (SUPDAT) -- 6505-00N092452

=====
Product Identification
=====

Product ID:C4888, CARBOXYMETHYL CELLULOSE (SUPDAT)

MSDS Date:01/01/1999

FSC:6505

NIIN:00N092452

Status Code:A

MSDS Number: CJVSD

=== Responsible Party ===

Company Name:SIGMA CHEMICAL CO

Box:14508

City:ST LOUIS

State:MO

ZIP:63178

Country:US

Info Phone Num:314-771-5765

Emergency Phone Num:314-771-5765

CAGE:21076

=== Contractor Identification ===

Company Name:SIGMA CHEMICAL COMPANY

Address:3050 SPRUCE ST

Box:14508

City:ST LOUIS

State:MO

ZIP:63178

Country:US

Phone:314-771-5765

CAGE:21076

=====
Composition/Information on Ingredients
=====

Ingred Name:CELLULOSE, CARBOXYMETHYL ETHER, SODIUM SALT;

(CARBOXYMETHYLCELLULOSE SODIUM MEDIUM VISCOSITY)

CAS:9004-32-4

RTECS #:FJ5950000

=====
Hazards Identification
=====

LD50 LC50 Mixture:LD50: (ORAL,RAT) 27000 MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

Effects of Overexposure:SEE HEALTH HAZARDS.

=====
First Aid Measures
=====

First Aid:IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. IN CASE OF CONTACT, IMMEDIATELY WASH SKIN WITH SOAP AND COPIOUS AMOUNTS OF WATER. IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A

PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE.

===== Fire Fighting Measures =====

Autoignition Temp: =370.C, 698.F

Extinguishing Media: WATER SPRAY. CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures: WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT TO PREVENT CONTACT WITH SKIN AND EYES.

Unusual Fire/Explosion Hazard: EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

~~THIS MATERIAL, LIKE MOST MATERIALS IN POWDER FORM, IS CAPABLE OF CREATING DUST EXPLOSION. STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE FLASH FIRE.~~

===== Accidental Release Measures =====

Spill Release Procedures: WEAR NIOSH APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL. ~~AVOID RAISING DUST.~~ VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

===== Handling and Storage =====

Handling and Storage Precautions: CAUTION: AVOID CONTACT AND INHALATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID PROLONGED OR REPEATED EXPOSURE.

Other Precautions: KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: NIOSH APPROVED RESPIRATOR

Ventilation: MECHANICAL EXHAUST REQUIRED.

Protective Gloves: COMPATIBLE CHEMICAL-RESISTANT GLOVES.

Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES.

Other Protective Equipment: ANSI APPROVED EYE WASH & DELUGE SHOWER.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

MFR TRADE NAME/PART NO: SODIUM MEDIUM VISCOSITY. TOXICITY INFO: OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

===== Physical/Chemical Properties =====

Melt/Freeze Pt: >300.C, 572.F

Appearance and Odor: OFF-WHITE POWDER.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES

STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products: TOXIC FUMES OF: CARBON MONOXIDE, CARBON DIOXIDE.

===== Toxicological Information =====

Toxicological Information: RTECS #: FJ5950000. CELLULOSE, CARBOXYMETHYL ETHER, SODIUM SALT. TOXICITY DATA: ORL-RAT LD50: 27000 MG/KG. FOREAE 13, 29, 1948. IHL-RAT LC50: >5800 MG/M3/4H. TOLED5. (SUPPL), 243, 1992. ORL-MUS LD50: >27 GM /KG. PESTD5 17, 351, 1976. ORL-RBT LD50: >27 GM/KG. PESTD5 17, 351, 1976. SKN-RBT LD50: >2 GM/KG. TOLED5. (SUPPL)

,243,1992. ORL-GPG LD50:16000 MG/KG. FOREAE 13,29,1948. TARGET ORGAN DATA: PATERNAL EFTS (PR OSTATE, SEMINAL VESICLE, COWPER'S, ACCESSORY GLANDS. TUMORIGENIC (NEOPLASTIC BY RTECS CRITERIA), (TUMORS AT SITE OF APPLICATION). ONLY SELECTED REGISTRY OF TOXIC EFFECTS (SUPDAT)

=====
Ecological Information
=====

Ecological:DATA NOT YET AVAILABLE.

=====
Disposal Considerations
=====

Waste Disposal Methods:DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

=====
MSDS Transport Information
=====

Transport Information:CONTAT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

=====
Regulatory Information
=====

Federal Regulatory Information:EUROPEAN INFORMATION. CAUTION: SUBSTANCE NOT YET FULLY TESTED. REVIEWS, STANDARDS, AND REGULATIONS. OEL=MAK. NOES 1983: HZD T1474; NIS 93; TNF 13501; NOS 102; TNE 318345; TFE 184422. EPA TSCA SECTION 8(B) CHEMICAL INVENTORY. EPA TSCA SECTION 8(E) RISK NOTIFICATION, 8EHQ-0892-8786. EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JUNE 1998.

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SCIENTIFIC POLYMER PRODUCTS INC -- CELLULOSE ACETATE, 083 -- 6810-00N042674

===== Product Identification =====

Product ID: CELLULOSE ACETATE, 083
 MSDS Date: 11/01/1991
 FSC: 6810
 NIIN: 00N042674
 MSDS Number: BSXXY
 === Responsible Party ===
 Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Info Phone Num: 716-265-0413
 Emergency Phone Num: 716-265-0413
 CAGE: 0MWG0

=== Contractor Identification ===
 Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 Box: City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Phone: 716-265-0413
 CAGE: 0MWG0

===== Composition/Information on Ingredients =====

Ingred Name: CELLULOSE ACETATE
 CAS: 9004-35-7
 Fraction by Wt: 100%
 OSHA PEL: N/K
 ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: NONE LISTED BY MANUFACTURER.
 Routes of Entry: Inhalation: NO Skin: NO Ingestion: NO
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: MATERIALS THAT CONTACT EYE MAY BE
 IRRITATING OR CAUSE MECHANICAL INJURY. LOW HAZARD FOR USUAL
 HANDLING.
 Explanation of Carcinogenicity: NOT RELEVANT.
 Effects of Overexposure: SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure: NONE LISTED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
 ASSISTANCE. INHALATION: REMOVE FROM EXPOSURE. IF BREATHING STOPS,
 BEGIN MOUTH TO MOUTH. EYES: FLUSH WITH WATER FOR AT LEAST 15
 MINUTES. SKIN: WASH AFFECTED AREA WITH SOAP AND WATER. REMOVE DIRTY
 CLOTHING. INGESTION: CALL MD IMMEDIATELY.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, FOAM, CARBON DIOXIDE, DRY CHEMICAL.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL
PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:~~POWDER MATERIAL MAY FORM EXPLOSIVE
DUST-AIR MIXTURES.~~

===== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP AND PLACE IN A CONTAINER FOR
DISPOSAL.
Neutralizing Agent:NONE LISTED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN DRY COOL PLACE IN TIGHTLY
CLOSED CONTAINER.
Other Precautions:NONE LISTED BY MANUFACTURER.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF NEEDED. WEAR NIOSH/MSHA APPROVED RESPIRATOR
APPROPRIATE FOR EXPOSURE OF CONCERN .
Ventilation:LOCAL EXHAUST.
Protective Gloves:IMPERVIOUS GLOVES.
Eye Protection:ANSI APPRVD CHEM WORKER GOGGLES .
Other Protective Equipment:NOT APPLICABLE.
Work Hygienic Practices:GOOD HYGIENE SHOULD BE FOLLOWED.
Supplemental Safety and Health
NONE LISTED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:N1
Spec Gravity:1.31-1.32
Solubility in Water:INSOLUBLE
Appearance and Odor:WHITE POWDER; ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
OXIDIZERS.
Stability Condition to Avoid:HIGH TEMPERATURES.
Hazardous Decomposition Products:CARBON MONOXIDE, CARBON DIOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods:LANDFILL IN ACCORDANCE WITH STATE, FEDERAL AND
LOCAL REGULATIONS.

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of Defense. The United States of America in no manner whatsoever,
expressly or implied, warrants this information to be accurate and
disclaims all liability for its use. Any person utilizing this
document should seek competent professional advice to verify and
assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Cellulose Acetate Butyrate

ACC# 96639

Section 1 - Chemical Product and Company Identification

MSDS Name: Cellulose Acetate Butyrate**Catalog Numbers:** AC177790000, AC177790040, AC177790050, AC177792500, AC177795000**Synonyms:** None.**Company Identification:**

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC: 800-424-9300**

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9004-36-8	Cellulose Acetate Butyrate	100	unlisted

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white chunks.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: None known.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT

induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: N/A

Upper: N/A

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cellulose Acetate Butyrate	none listed	none listed	none listed

OSHA Vacated PELs: Cellulose Acetate Butyrate: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's

eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Chunks

Appearance: white

Odor: None reported.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 110.00 - 125.00 deg C

Decomposition Temperature: Not available.

Solubility: high-boiling solvents

Specific Gravity/Density: Not available.

Molecular Formula: Not available.

Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 9004-36-8 unlisted.

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 9004-36-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 9004-36-8 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9004-36-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations
European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 9004-36-8: No information available.

Canada - DSL/NDSL

CAS# 9004-36-8 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
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MSDS Creation Date: 10/30/1998

Revision #4 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

Material Safety Data Sheet

Cellulose Acetate Propionate, Average M.W. 15000

ACC# 96467

Section 1 - Chemical Product and Company Identification

MSDS Name: Cellulose Acetate Propionate, Average M.W. 15000**Catalog Numbers:** AC404270000, AC404275000**Synonyms:** None.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
9002-39-1	Cellulose Acetate Propanoate	ca 100	unlisted

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white powder.

Caution! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.**Target Organs:** No data found.**Potential Health Effects****Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT

induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cellulose Acetate Propanoate	none listed	none listed	none listed

OSHA Vacated PELs: Cellulose Acetate Propanoate: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's

eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: white

Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 188.00 - 210.00 deg C

Decomposition Temperature: Not available.

Solubility: Not available.

Specific Gravity/Density: Not available.

Molecular Formula: Not available.

Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation, excess heat, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products: Irritating and toxic fumes and gases.

Hazardous Polymerization: Has not been reported

Section 11 - Toxicological Information

RTECS#:

CAS# 9004-39-1 unlisted.

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 9004-39-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Neurotoxicity: No information available.

Other Studies:

Section 12 - Ecological Information
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No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information
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US FEDERAL**TSCA**

CAS# 9004-39-1 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 9004-39-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

Not available.

Risk Phrases:**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 9004-39-1: No information available.

Canada - DSL/NDSL

CAS# 9004-39-1 is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information
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MSDS Creation Date: 11/02/1998

Revision #4 Date: 10/03/2005

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SCIENTIFIC POLYMER PRODUCTS INC -- CELLULOSE TRIACETATE, 031 -- 6810-00N041010

===== Product Identification =====

Product ID:CELLULOSE TRIACETATE, 031
 MSDS Date:11/02/1991
 FSC:6810
 NIIN:00N041010
 MSDS Number: BSGWT
 === Responsible Party ===
 Company Name:SCIENTIFIC POLYMER PRODUCTS INC
 Address:6265 DEAN PARKWAY
 City:ONTARIO
 State:NY
 ZIP:14519
 Country:US
 Info Phone Num:716-265-0413
 Emergency Phone Num:716-265-0413
 CAGE:0MWG0

=== Contractor Identification ===

Company Name:SCIENTIFIC POLYMER PRODUCTS INC
 Address:6265 DEAN PARKWAY
 Box:City:ONTARIO
 State:NY
 ZIP:14519
 Country:US
 Phone:716-265-0413
 CAGE:0MWG0

===== Composition/Information on Ingredients =====

Ingred Name:CELLULOSE TRIACETATE
 CAS:9012-09-3
 Fraction by Wt: 100%

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:MATERIAL THAT CONTACTS EYE MAY BE
 IRRITATING OR CAUSE MECHANICAL INJURY. LOW HAZARD FOR USUAL
 HANDLING.
 Explanation of Carcinogenicity:NOT RELEVANT.
 Effects of Overexposure:SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
 ASSISTANCE. INHAL:REMOVE FROM EXPOSURE. IF BREATHING STOPS, BEGIN
 MOUTH TO MOUTH. EYES:FLUSH W/WATER FOR AT LEAST 15 MINS. SKIN:WASH
 AFFECTED AREA W/ SOAP & WATER. REMOVE DIRTY CLOTHING. INGEST:CALL
 MD IMMEDIATELY .

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, FOAM, CARBON DIOXIDE OR DRY CHEMICAL.
 Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL

PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:NONE KNOWN.

===== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP & PLACE IN CONTAINER FOR DISPOSAL.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN DRY, COOL PLACE IN TIGHTLY CLOSED CONTAINER. GOOD HYGIENE SHOULD BE FOLLOWED.

Other Precautions:THIS MATERIAL IS INTENDED FOR LABORATORY USE ONLY. IT IS NOT SOLD OR INTENDED FOR DRUG, HOUSEHOLD OR OTHER USES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL EXHAUST.

Protective Gloves:IMPERVIOUS GLOVES.

Eye Protection:SAFETY GLASSES.

Other Protective Equipment:NOT APPLICABLE.

Work Hygienic Practices:GOOD HYGIENE SHOULD BE FOLLOWED.

Supplemental Safety and Health

NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

Spec Gravity:1.31-1.32

Solubility in Water:INSOLUBLE

Appearance and Odor:OPAQUE PELLETS; ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

OXIDIZERS.

Stability Condition to Avoid:NOT APPLICABLE.

Hazardous Decomposition Products:CARBON MONOXIDE & CARBON DIOXIDE.

===== Disposal Considerations =====

Waste Disposal Methods:LANDFILL IN ACCORDANCE W/STATE, FEDRERAL & LOCAL REGULATIONS.

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SCIENTIFIC POLYMER PRODUCTS INC -- ETHYL CELLULOSE, 459-464 -- 6810-00N041613

===== Product Identification =====

Product ID: ETHYL CELLULOSE, 459-464
MSDS Date: 10/01/1991
FSC: 6810
NIIN: 00N041613
MSDS Number: BSWFN
=== Responsible Party ===
Company Name: SCIENTIFIC POLYMER PRODUCTS INC
Address: 6265 DEAN PARKWAY
City: ONTARIO
State: NY
ZIP: 14519
Country: US
Info Phone Num: 716-265-0413
Emergency Phone Num: 716-265-0413
CAGE: 0MWG0

=== Contractor Identification ===
Company Name: SCIENTIFIC POLYMER PRODUCTS INC
Address: 6265 DEAN PARKWAY
Box: City: ONTARIO
State: NY
ZIP: 14519
Country: US
Phone: 716-265-0413
CAGE: 0MWG0

===== Composition/Information on Ingredients =====

Ingred Name: CELLULOSE, ETHYL ETHER; (ETHYL CELLULOSE).
CAS: 9004-57-3
RTECS #: FJ5950500
Fraction by Wt: 100%

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation: NO Skin: NO Ingestion: NO
Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
Health Hazards Acute and Chronic: NO HUMAN HEALTH EFFECTS ARE KNOWN TO
EXIST.
Explanation of Carcinogenicity: NOT RELEVANT.
Effects of Overexposure: SEE HEALTH HAZARDS.
Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
ASSISTANCE. INHAL: REMOVE FROM EXPOSURE. IF BREATHING STOPS, BEGIN
MOUTH TO MOUTH. EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.
SKIN: WASH AFFECTE D AREA WITH SOAP & WATER. REMOVE DIRTY CLOTHING.
INGEST: CALL MD IMMEDIATELY.

===== Fire Fighting Measures =====

Extinguishing Media: WATER SPRAY, DRY CHEMICAL, CARBON DIOXIDE OR HALON.
Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED SCBA & FULL

PROTECTIVE EQUIPMENT.

Unusual Fire/Explosion Hazard: MATERIAL MAY FORM FLAMMABLE DUST-AIR MIXTURES.

===== Accidental Release Measures =====

Spill Release Procedures: SCOOP INTO CONTAINER FOR DISPOSAL.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions: STORE IN DRY COOL PLACE IN TIGHTLY CLOSED CONTAINERS.
Other Precautions: MATERIAL IS INTENDED FOR LAB USE ONLY. IT IS NOT SOLD OR INTENDED FOR DRUG, HOUSEHOLD OR OTHER USES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: IF NEEDED. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .
Ventilation: LOCAL EXHAUST.
Protective Gloves: IMPERVIOUS GLOVES.
Eye Protection: SAFETY GLASSES.
Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices: GOOD HYGIENE SHOULD BE FOLLOWED.
Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

Spec Gravity: 1.12
Solubility in Water: NEGLIGIBLE
Appearance and Odor: WHITE GRANULAR POWDER, ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
NONE KNOWN.
Stability Condition to Avoid: NONE KNOWN.
Hazardous Decomposition Products: CO, CO*2 & SMOKE. DEPENDING ON CONDITION, SOME ALIPHATIC ALDEHYDES & CARBOXYLIC ACIDS MAY ALSO BE FORMED.

===== Disposal Considerations =====

Waste Disposal Methods: LANDFILL IN ACCORDANCE WITH FEDERAL, STATE & LOCAL REGULATIONS.

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NATIONAL CASEIN CO. -- DR BOAT POWDERED UREA FORMALDEHYDE RESIN GL -- 8040-00-273-8720

===== Product Identification =====

Product ID: DR BOAT POWDERED UREA FORMALDEHYDE RESIN GL

MSDS Date: 07/01/1986

FSC: 8040

NIIN: 00-273-8720

MSDS Number: BKKDC

=== Responsible Party ===

Company Name: NATIONAL CASEIN CO.

Address: 601 W. 80TH STREET

City: CHICAGO

State: IL

ZIP: 60620

Country: US

Info Phone Num: 708-846-7300

Emergency Phone Num: 800-424-9300 (CHEMTREC)

CAGE: 82258

=== Contractor Identification ===

Company Name: NATIONAL CASEIN CO.

Address: 601 W. 80TH STREET

City: CHICAGO

State: IL

ZIP: 60620

Country: US

Phone: 708-846-7300

CAGE: 82258

===== Composition/Information on Ingredients =====

Ingred Name: FORMALDEHYDE (SARA III)

CAS: 50-00-0

RTECS #: LP8925000

Fraction by Wt: 1%

OSHA PEL: SEE 1910.1048

ACGIH TLV: C 0.3 PPM; A2; 9293

EPA Rpt Qty: 100 LBS

DOT Rpt Qty: 100 LBS

Ingred Name: DUST

Fraction by Wt: 20%

Other REC Limits: NONE SPECIFIED

ACGIH TLV: 5 MG/M3 (RESPIR DUST)

===== Hazards Identification =====

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES

Reports of Carcinogenicity: NTP: YES IARC: YES OSHA: NO

Health Hazards Acute and Chronic: IRRITATION TO EYES, NOSE, THROAT;
TEARING IN EYES, BURNING NOSE, COUGHING; BRONCHIAL SPASMS,
PULMONARY IRRITATION; DERMATITIS, NAUSEA, VOMITING, LOSS OF
CONSCIOUSNESS.

Explanation of Carcinogenicity: FORMALDEHYDE IS AN IRRITANT AND IS
LISTED AS A SUSPECTED CARCINOGEN BY NTP AND IARC.

Medical Cond Aggravated by Exposure: TARGET ORGANS: RESPIRATORY SYSTEM,
EYES, SKIN, DIGESTIVE TRACT.

===== First Aid Measures =====

First Aid:INHALATION: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION.
GET MEDICAL ATTENTION. EYES: FLUSH WITH WATER FOR 15 MINUTES. GET
MEDICAL ATTENTION. SKIN; WASH OFF THOROUGHLY. INGESTION: DRINK
LARGE QUANTITY OF WATER. INDUCE VOMITING. CONSULT PHYSICIAN.

===== Fire Fighting Measures =====

Extinguishing Media:WATER, CO2, FOAM.
Unusual Fire/Explosion Hazard:HIGH CONCENTRATION OF DUST IN AIR IS A
POTENTIAL EXPLOSION HAZARD

===== Accidental Release Measures =====

Spill Release Procedures:SCOOP INTO A SUITABLE CONTAINER (BAG OR DRUM)
FOR SALVAGE OR DISPOSAL.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID MOISTURE. KEEP CONTAINER CLOSED.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NOT NEEDED, UNLESS USED IN ENCLOSED AREA.
Ventilation:SOME VENTILATION NEEDED.
Protective Gloves:RUBBER OR PLASTIC.
Eye Protection:SAFETY GLASSES/GOGGLES.
Other Protective Equipment:PROTECTIVE EQUIPMENT.
Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:T6
Appearance and Odor:TAN, FORMALDEHYDE ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
MOISTURE.
Hazardous Decomposition Products:FORMALDEHYDE.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE ACCORDING TO FEDERAL, STATE AND LOCAL
REGULATIONS.

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particular situation.

International Paper -- Nevamar**MATERIAL SAFETY DATA SHEET****SECTION I - PRODUCT INFORMATION**

PRODUCT NAME: ~~Nevamar High Pressure Decorative Laminate®~~
 CHEMICAL NAME: ~~Laminated Plastic~~
 CHEMICAL FORMULA: Not Applicable Due to Composite Nature of Product
 CHEMICAL FAMILY: Plastic Composite
 PRODUCT USE: Decorative Surface Covering

MANUFACTURER'S NAME AND ADDRESS:

~~International Paper~~
 Decorative Products Division
 7240 Parkway Drive, Suite 310
 Hanover, Maryland 21076

TECHNICAL CONTACT: Phil Slowiak, Manager, Environment, Health & Safety
 INFORMATION TELEPHONE NUMBER: (410) 519-2153 (Eastern Standard Time)
 EMERGENCY TELEPHONE NUMBER: Chemtrec (800) 424-9300

SECTION II - HAZARDOUS COMPONENTS

No hazardous components according to 29 CFR 1910.1200.

~~Nuisance dust may be generated during cutting or sanding operations.~~

Nuisance dust is considered as "Particulates Not Otherwise Classified" or "Particulates Not Otherwise Regulated".

	OSHA PEL	ACGIH TLV
Particulates Not Otherwise Classified or Regulated	--- TWA 15 mg/m3 (Total Dust) STEL None	TWA 10 mg/m3 (Inhalable Particulate) STEL None
Particulates Not Otherwise Classified or Regulated	--- TWA 5 mg/m3 (Respirable Particulate) STEL None	TWA 3 mg/m3 STEL None

SECTION III - PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Laminate sheet. No discernible odor.
 MOLECULAR WEIGHT: Not applicable due to composite nature of product.
 SPECIFIC GRAVITY: 1.2 @ 70 F
 SOLUBILITY IN WATER: Insoluble in water.
 pH: Not applicable as product is solid.

SECTION IV - FIRE AND EXPLOSION DATA:

FLASH POINT: Product has no flashpoint per Pensky Martins Closed Cup method.
 FIRE EXTINGUISHING MEDIA: This material is considered a "Class A" type combustible material.

Use water, foam or dry chemical to extinguish.

FLAMMABLE LIMITS: Not applicable as material does not form a vapor in air.

SPECIAL FIRE FIGHTING PROCEDURES: No special procedures required.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Minimize accumulation of dust from cutting or sanding operations through use of local ventilation systems. High airborne concentrations of combustible dusts may be explosive if contacted with an ignition source.

HAZARDOUS COMBUSTION PRODUCTS: Thermal decomposition may release toxic and/or hazardous gases.

SECTION V - REACTIVITY DATA

STABILITY: Product is stable.

CONDITIONS TO AVOID: Avoid exposure to open flame.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may release toxic and/or hazardous gases.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VI - HEALTH HAZARD INFORMATION

EXPOSURE FROM ROUTINE USE: Dust from cutting or sanding operations can cause irritation to the eyes, respiratory system and skin.

EFFECTS OF OVEREXPOSURE: Exposure to elevated dust levels may cause irritation to the eyes and respiratory system. Prolonged skin exposure to dust may cause drying of the skin.

ROUTES OF EXPOSURE: Potential routes of exposure are inhalation as well as skin and eye contact.

EMERGENCY FIRST AID PROCEDURES:

EYE CONTACT: Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of dust remains (approximately 15 - 20 minutes).

SKIN CONTACT: Wash affected area with soap and water to remove residual dust.

INHALATION: Remove from exposure to fresh air immediately.

INGESTION: Treat symptomatically and supportively if dust is ingested.

OTHER: The resin used to make this plastic contains small amounts of formaldehyde. The cured plastic may emit small amounts of formaldehyde during fabrication or if heating of the product occurs. Air testing of representative fabrication operations indicates that formaldehyde releases are minimal and formaldehyde air concentrations are below regulatory standards. Formaldehyde has been identified as a skin sensitizer in low concentrations and as a probable human carcinogen (IARC-2A, pharyngeal cancer excess in formaldehyde exposed workers).

SECTION VII - TOXICITY DATA

ORAL: No data available.

DERMAL: No data available.

INHALATION: No data available.

EYE: No data available.

CARCINOGENICITY: Product has not been tested for carcinogenicity.

SECTION VIII - SPECIAL PROTECTION INFORMATION

WORK AND HYGIENE PRACTICES: Wear safety glasses or goggles in fabrication operations that

may generate airborne dust. Wear gloves during exposure to dust or frequently wash hands to remove residual dust. Maintain airborne dust limits below the exposure limits. ~~Minimize dust generation and accumulation from fabrication operations.~~ Sweep up dust. ~~Avoid blowing dust with compressed air.~~ Avoid exposure of dust to open flame and ignition sources. Electrically ground and bond all equipment used for fabrication operations.

STORAGE AND HANDLING PRACTICES: No special requirements for the products. Store dust away from heat, ignition sources and oxidizing agents.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Do not use compressed air to remove dust from equipment. Sweep or wash dust from unit.

VENTILATION AND ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain airborne concentrations below the exposure limits. Enclose fabrication operations, where possible, to minimize dust dispersion into other work areas.

RESPIRATORY PROTECTION: Where dust exposures may exceed the regulatory standards, respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respirator protection (Z88.2-1992).

EYE PROTECTION: Wear ANSI-approved safety glasses or goggles in fabrication operations that may generate airborne dust.

HAND AND BODY PROTECTION: To prevent drying of skin, wear gloves during exposure to dust or frequently wash hands to remove residual dust. Use hand lotion to moisten hands.

SECTION IX - SPILL, LEAK AND DISPOSAL PROCEDURES

IN CASE MATERIAL IS SPILLED OR RELEASED: This material is a non-hazardous waste. Dispose of dust or excess material according to applicable federal, state and local regulations.

SECTION X - REGULATORY INFORMATION

DOT: Product not regulated by D.O.T.

Additional Requirements for State of California: Warning: Decorative laminate products contain formaldehyde, a substance known to the State of California to cause cancer. Laminates contain small amounts of residual formaldehyde that may be released in measureable quantities when stored in bulk quantities.

MSDS NUMBER: NLP

Document Number: N9727-0703

Updated: 8/1/97

Supersedes: 1/15/97

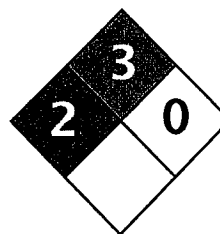
Provided by: Katrina Myers, Decorative Products Division

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Health	1
Fire	3
Reactivity	0
Personal Protection	A

Material Safety Data Sheet Acetal MSDS

Section 1: Chemical Product and Company Identification

Product Name: Acetal

Catalog Codes: SLA3655

CAS#: 105-57-7

RTECS: AB2800000

TSCA: TSCA 8(b) inventory: Acetal

CI#: Not available.

Synonym: 1,1-Diethoxyethane; Diethyl acetal, Ethylidene diethyl ether; Ethane, 1,1-diethoxy-

Chemical Name: Acetaldehyde, diethyl acetal

Chemical Formula: C6-H14-O2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Acetal	105-57-7	100

Toxicological Data on Ingredients: Acetal: ORAL (LD50): Acute: 4600 mg/kg [Rat]. 3500 mg/kg [Mouse]. 3545 mg/kg [Rabbit]. DERMAL (LD50): Acute: 10000 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to central nervous system (CNS).

Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact: Not available.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: Not available.

Flash Points: CLOSED CUP: -21°C (-5.8°F).

Flammable Limits: LOWER: 1.6% UPPER: 10.4%

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat.
Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of static discharge: Not available.
Slightly explosive in presence of heat.
Non-explosive in presence of shocks.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:

May form explosive mixtures with air.
May form explosive peroxides on prolonged storage.
Vapor may travel considerable distance to source of ignition and flash back.

Special Remarks on Explosion Hazards:

Vapor may form explosive mixtures with air.

May form explosive peroxides on prolonged storage.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid:

Keep away from heat. ~~Keep away from sources of ignition.~~ Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed.

Section 7: Handling and Storage

Precautions:

~~Keep away from heat. Keep away from sources of ignition.~~ Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. ~~Avoid all possible sources of ignition (spark or flame).~~

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Safety glasses. Lab coat.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pungent, Green, Woody Solvent

Taste: Whiskey

Molecular Weight: 118.18 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point:

102.7°C (216.9°F) @ 760 mm Hg.

66.3 deg. C @ 200 mm Hg.

39.8 deg. C @ 60 mm Hg.
31.9 deg. C @ 40 mm Hg.
19.6 deg. C @ 20 mm Hg.

Melting Point: -100°C (-148°F)

Critical Temperature: Not available.

Specific Gravity: 0.8254 (Water = 1)

Vapor Pressure: 3.7 kPa (@ 25°C)

Vapor Density: 4.08 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in oil; $\log(\text{oil/water}) = 0.8$

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, acetone.

Solubility:

Soluble in acetone.

Partially soluble in cold water.

Miscible with alcohol, ether.

Soluble in heptane, methylcyclohexane, ethyl acetate, propyl alcohol, isopropyl alcohol, butyl alcohol, isoputyl alcohol.

Soluble in chloroform.

Solubility in water: 100 g. of water dissolves 5 g acetal.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation.

Toxicity to Animals:

Acute oral toxicity (LD50): 3500 mg/kg [Mouse].

Acute dermal toxicity (LD50): 10000 mg/kg [Rabbit].

Chronic Effects on Humans: May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:

Lowest Published Lethal Dose:

LCL [Rat] - Route: Inhalation; Dose: 4000 ppm/4H

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects:

Skin: Causes slight irritation.

Eyes: Causes slight eye irritation.

Inhalation: Inhalation of high concentrations of mist or vapor may affect behavior/central nervous system and cause central nervous system depression and narcotic effects.

Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting and diarrhea.

Chronic Potential Health Effects:

Skin: Prolonged skin contact can cause drying and cracking of the skin.

Inhalation: Repeated exposure can damage the nervous system

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Acetal UNNA: 1088 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Acetal

Pennsylvania RTK: Acetal

Massachusetts RTK: Acetal

Massachusetts spill list: Acetal

New Jersey: Acetal

TSCA 8(b) inventory: Acetal

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).

DSCL (EEC):

R11- Highly flammable.

R36/38- Irritating to eyes and skin.

S9- Keep container in a well-ventilated place.

S16- Keep away from sources of ignition - No smoking.

S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 3

Reactivity: 0

Personal Protection: a

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:

Not applicable.

Lab coat.

Wear appropriate respirator when ventilation is inadequate.

Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 10/09/2005 03:36 PM

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POLYSCIENCES INC -- POLY (METHACRYLIC ACID) -- 6810-00F038339

===== Product Identification =====

Product ID: POLY (METHACRYLIC ACID)

MSDS Date: 07/18/1991

FSC: 6810

NIIN: 00F038339

MSDS Number: BWTJ

=== Responsible Party ===

Company Name: POLYSCIENCES INC

Address: 400 VALLEY RD

City: WARRINGTON

State: PA

ZIP: 18976-2522

Country: US

Info Phone Num: 215-343-6484

Emergency Phone Num: 215-343-6484

CAGE: 9C365

=== Contractor Identification ===

Company Name: POLYSCIENCES INC

Address: 400 VALLEY RD

Box: City: WARRINGTON

State: PA

ZIP: 18976

Country: US

Phone: 215-343-6484

CAGE: 32939

Company Name: POLYSCIENCES INC

Address: PAUL VALLEY INDUSTRIAL PARK

City: WARRINGTON

State: PA

ZIP: 18976

Country: US

Phone: 215-313-6484

CAGE: 9C365

===== Composition/Information on Ingredients =====

Ingred Name: METHACRYLIC ACID POLYMER *94-4*

CAS: 25087-26-7

===== Hazards Identification =====

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES

Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO

Health Hazards Acute and Chronic: RESIDUAL MONOMER VAPOR MAY BE

IRRITATING TO EYES, SKIN, MUCOUS MEMBRANES, RESPIRATORY TRACT & MAY
PRODUCE SYMPTOMS IN POORLY VENTILATED AREA.

Explanation of Carcinogenicity: NONE

Effects of Overexposure: IRRITATION, HEADACHE, NAUSEA

===== First Aid Measures =====

First Aid: SKIN: WASH AREA W/COPIOUS AMOUNTS OF WATER. EYES: FLUSH

W/WATER FOR 15 MINS. INHALATION: REMOVE TO FRESH AIR. GIVE

OXYGEN/CPR IF NEEDED. INGESTION: DRINK 1-2 GLASSES OF WATER. OBTAIN

MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Extinguishing Media:WATER, CO2, DRY CHEMICAL POWDER, FOAM
Fire Fighting Procedures:WEAR SELF CONTAINED BREATHING APPARATUS & FULL
PROTECTIVE EQUIPMENT

===== Accidental Release Measures =====

Spill Release Procedures:WEAR SELF CONTAINED BREATHING APPARATUS,
RUBBER BOOTS, GLOVES. SWEEP UP. DON'T RAISE DUST. WASH & VENTILATE
SITE AFTER PICKUP IS COMPLETE. MATERIAL WILL MAKE FLOORS SLIPPERY,
EXERCISE CARE TO AVOID FALLING.

===== Handling and Storage =====

Handling and Storage Precautions:STORE AT ROOM TEMP. KEEP CONTAINER
TIGHTLY CLOSED.
Other Precautions:AVOID PROLONGED/FREQUENT EXPOSURE.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:OSHA/MHSA APPROVED RESPIRATOR IF NEEDED.
Ventilation:MECHANICAL
Protective Gloves:CHEMICAL
Eye Protection:SAFETY GOGGLES
Other Protective Equipment:SAFETY SHOWER & EYE BATH
Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health

===== Physical/Chemical Properties =====

Solubility in Water:SLIGHT
Appearance and Odor:OFF WHITE POWDER
Percent Volatiles by Volume:0.5

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
Hazardous Decomposition Products:CO, CO2

===== Disposal Considerations =====

Waste Disposal Methods:MIX WASTE W/COMBUSTIBLE CARRIER & BURN IN A
SUITABLE EQUIPPED CHEMICAL INCINERATOR. IAW/FEDERAL, STATE & LOCAL
REGULATIONS.

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assume responsibility for the suitability of this information to their
particular situation.

CENTRAL SCIENTIFIC CO (CENCO) -- 39474-04 METHYL CELLULOSE -- 6810-00D004147

===== Product Identification =====

Product ID:39474-04 METHYL CELLULOSE
 MSDS Date:08/10/1991
 FSC:6810
 NIIN:00D004147
 MSDS Number: BXYBY
 === Responsible Party ===
 Company Name:CENTRAL SCIENTIFIC CO (CENCO)
 Address:11222 MELROSE AVE
 City:FRANKLIN PARK
 State:IL
 ZIP:60131
 Country:US
 Info Phone Num:708-451-40150
 Emergency Phone Num:800-424-9300 (CHEMTREC) /800-256-2586
 Preparer's Name:K.KUCHEL
 CAGE:CNTRL

===== Contractor Identification =====

Company Name:CENTRAL SCIENTIFIC CO
 Address:MELROSE AVE
 Box:City:FRANKLIN PARK
 State:IL
 ZIP:60131
 Country:US
 Phone:800-424-9300 (CHEMTREC) ;312-364-0150
 CAGE:CNTRL

===== Composition/Information on Ingredients =====

Ingred Name:METHYL CELLULOSE
 CAS:9004-67-5
 RTECS #:FJ5959000
 Fraction by Wt: 100%
 Other REC Limits:NONE RECOMMENDED

===== Fire Fighting Measures =====

Extinguishing Media:USE ANY MEDIUM SUITABLE FOR EXTINGUISHING
 SUPPROTING FIRE.
 Fire Fighting Procedures:IN EVENT OF FIRE, WEAR FULL PROTECTIVE
 CLOTHING & NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS W/FULL
 FACEPC OPERATED IN PRESSURE DEMAND/OTHER +PRESS MODE.
 Unusual Fire/Explosion Hazard:AS W/MOST ORG SOLIDS, FIRE POSSIBLE @HI
 TEMP OR CONTACT W/IGN SOURCE. FINE DUST DISPERSED IN AIR IN
 SUIFFICIENT CONCEN & PRESENCE OF IGN SOURCE POT DUST EXPLO HAZ

===== Exposure Controls/Personal Protection =====

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:N1
 Melt/Freeze Pt:M.P/F.P Text:DECOMPOSES
 Solubility in Water:SLIGHTLY SOLUBLE.
 Appearance and Odor:WHITE POWDER, NO ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
STRONG OXIDIZERS, IODINE.
Stability Condition to Avoid: HEAT, IGNITION SOURCES.

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1. Identification of the substance / preparation and of the company / undertakings

Product Details:

Trade Name: Perm® Reline/Repair Resin (Compounded Polymethyl Methacrylate)

Manufacturer:

Coltene/Whaledent Inc.
235 Ascot Parkway
Guyahoga Falls, OH 44229 USA
Fax +1 330 916 7077
info@coltenewhaledent.com

Authorized EU Representative
Coltene/Whaledent GmbH+ Co. KG
Raiffeisenstrasse 30
89129 Langenau / Germany
Tel. +49 (0) 7345 805 0
Fax +49 (0) 7345 805 201

Emergency Contact Numbers:

USA & Canada: 1 800 535 5053
Main Phone Number: +1 330 916 8800

2. Composition / Information on Ingredients

Chemical Characterization: Acrylic Powder Resin

Hazardous Components

	Wt %	Index, R/S Phrases
Particulates, NoC	> 90%	None
Benzoyl Peroxide	< 1%	E, Xi, R-3,36,37,38
Diethyl Phthalate	< 15%	Xi; R - 36,37,38,63 ; S-26,36

3. Hazard Identification

Hazard Designation: Non-Hazardous

Information pertaining to particular dangers for man and environment: Nuisance dust. ~~Polymer dust is combustible.~~

Classification is in line with BC directive 88/379/EEC: Yes

4. First-Aid Measures

After Inhalation: Get to fresh air, if irritation persists, consult a physician.

After Skin Contact: Wash thoroughly with water for 15 minutes. If irritation persists, consult a physician.

After Eye Contact: Flush with water for 15 minutes. If irritation persists, consult a physician.

After Swallowing: Rinse mouth out with water. Contact a physician if large quantities were consumed.

5. Fire-Fighting Measures

Flammability: Combustible Dust **Flash Point:** 304°C (> 212 °F) **LEL:** Not Established **UEL:** Not Established

Extinguishing Media: Water, CO₂, dry chemical or foam.

Unsuitable Extinguishing Media: ~~Avoid extinguishing methods that generate a dust cloud.~~

Protective Equipment: Wear NIOSH approved self-contained breathing respirator in positive pressure mode.

Special Hazards: Polymer dust is combustible (at limits similar to coal dust).

6. Accidental Release Measures

Personal Precautions: Avoid eye contact by wearing safety goggles; avoid skin contact by wearing rubber gloves.

Environmental Precautions: Do not contaminate food or feed with this product. Keep container closed and upright when not in use.

Methods of Cleaning Up: Sweep up dust to avoid slipping hazard.

7. Handling and Storage

Precautions for Safe Handling: Always wear gloves and eye protection. Keep container closed when not in use.

Storage: Keep out of reach of children. Keep container closed. Store in a cool dry environment.

8. Exposure Controls/Personal Protection

Components with recommended limits for the work place

CAS No.	Description	Wt%	Type / Value
n.a.	Particulates NOC	> 90 %	OSHA PEL 15 mg/m ³
94-36-0	Benzoyl Peroxide	< 1 %	OSHA PEL 5 mg/ m ³
88-66-2	Diethyl Phthalate	<15 %	OSHA PEL 5 mg/ m ³

Engineering Controls: Local Exhaust Adequate; mechanical ventilation helpful.

Work/Hygienic Protection: Wash hands and equipment after use.

Hand/Skin Protection: Wear Protective Gloves.

Respiratory Protection: None Needed.

Eye Protection: Wear Safety Goggles.

Date of Issue: May 2004

Coltène/Whaledent Inc.

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n.a = not applicable, n.k. = not known

Perm® Reline/Repair Resin

P/N 48053B

9. Physical And Chemical Properties

Appearance: Free Flowing Powder
 Boiling Point: n.a.
 Flammability: No
 Vapor Pressure: n.a.
 pH: n.a.

Odor: Faint Acrylic
 Flash Point: 304 °C (> 212 °F)
 Auto flammability: No
 Explosive Properties: n.k.
 Viscosity: n.a.

Solubility: Insoluble in water
 Method: Tag Closed Cup
 Density: n.k.
 Explosive Limits in Air: N.K.
 Method: n.a.

10. Stability and Reactivity

Chemical Stability: Stable
 Materials to avoid: Strong Oxidizers

Conditions to avoid: Heating above 240 °C
 Hazardous Decomposition Products: Oxides of Carbon

11. Toxicological Information

Acute Toxicity: N.A.
 Primary Effects to Skin: Irritation can occur by repeated direct contact.
 Primary Effects to Eyes: Irritation can occur by repeated direct contact.
 Primary Effects to Respiratory System: Overexposure to dust may cause respiratory tract irritation
 Sensitization: N.A
 Additional Toxicological Info: Possible risk of impaired fertility. May cause harm to the unborn child

12. Ecological Information

General Information: N.A.
 Classification of Water endangerment: N.A.

13. Disposal Considerations

Product: This material contains Dibutyl phthalate. Contaminated product may be a RCRA/OSHA hazardous waste. Consult local regulatory laws for proper disposal. Completely polymerized materials can be disposed of together with household refuse in accordance with local regulatory law.

14. Transportation Information

DOT Shipping Name:
 Compounded Polymethyl Methacrylate
 Sea Transport IMDG/GGV Sea
 Class: Not Regulated
 Air Transport ICAO-TI and IATA-DGR
 Class: Not Regulated

DOT Hazard Class:
 Non-Regulated
 UN. No.: N.A.
 UN. No.: N.A.

UN-No.
 N.A.
 EmS-No: N.A. MFGA-No: N.A.

15. Regulatory Information

TSCA Inventory Status: This product and/or all of its components are included on the TSCA Inventory of Chemical Substances.
 SARA 311/312 Hazard Categories: None
 SARA 302 Extremely Hazardous Substances: None
 SARA 313 Toxic Chemicals

Chemical Name	CAS-No.	Weight %
Particulates, NOC	N/A	> 90 %
Benzoyl Peroxide	94-36-0	< 1 %
Dibutyl Phthalate	88-66-2	< 15%

Classification According to EEC Guidelines: n.a.

Classification According to VBF: n.a.

Canadian Regulations require the inclusion of the following statements under "Regulatory Information";

"This product has been classified in accordance with the hazard criteria of the controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations."

16. Other Information

Revision Summary: Changed to Company Format and Updated Address 2/24/04. Added authorized EU Rep. 5/5/04.

The information and recommendations set forth herein are presented in good faith and are believed to be correct as of the date hereof. Coltène/Whaledent Inc., however, makes no representations as to the completeness of security of this information and supplies it on the condition that the persons receiving same will make their own determination as to its suitability of their purposes prior to use. In no event will Coltène/Whaledent Inc. be responsible for damages of any nature whatsoever resulting from use of or reliance upon information

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:NONE SPECIFIED BY MANUFACTURER.

===== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP SPILL AND CONTAIN FOR SALVAGE OR DISPOSAL, WITHOUT CREATING A DUST CONDITION. DO NOT CONTAMINATE ANY LAKES, STREAMS, PONDS OR UNDERGROUND WATER SPRAY.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN A DRY ATMOSPHERE. AVOID CONTACT WITH HOT MATERIAL. USE WITH ADEQUATE VENTILATION. AVOID DUST FORMATION.

Other Precautions:THIS MATERIAL IS INTENDED FOR LABORATORY USE ONLY. IT IS NOT SOLD OR INTENDED FOR DRUG, HOUSEHOLD OR OTHER USES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF NEEDED. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL EXHAUST ADEQUATE.

Protective Gloves:IMPERVIOUS GLOVES.

Eye Protection:ANSI APVD CHEMICAL SAFETY GOGGLES

Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices:GOOD HYGIENE PRACTICES SHOULD BE STRICTLY FOLLOWED.

Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:N1

Melt/Freeze Pt:M.P/F.P Text:482F,250C

Spec Gravity:1.12

Solubility in Water:INSOLUBLE

Appearance and Odor:GRANULATED SOLID.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDENTS

Hazardous Decomposition Products:BURNING WILL PRODUCE TOXIC FUMES.

===== Disposal Considerations =====

Waste Disposal Methods:RESPOND IN ACCORDANCE TO STATE, FEDERAL AND LOCAL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies):
This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

SCIENTIFIC POLYMER PRODUCTS INC -- NYLON 6/T, 331 -- 9330-00N043704

===== Product Identification =====

Product ID: NYLON 6/T, 331
 MSDS Date: 07/01/1993
 FSC: 9330
 NIIN: 00N043704
 MSDS Number: BTGWC
 === Responsible Party ===
 Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Info Phone Num: 716-265-0413
 Emergency Phone Num: 716-265-0413
 CAGE: 0MWG0

=== Contractor Identification ===

Company Name: SCIENTIFIC POLYMER PRODUCTS INC
 Address: 6265 DEAN PARKWAY
 Box: City: ONTARIO
 State: NY
 ZIP: 14519
 Country: US
 Phone: 716-265-0413
 CAGE: 0MWG0

===== Composition/Information on Ingredients =====

Ingred Name: POLY (HEXAMETHYLENE TEREPHTHALAMIDE)
 CAS: 25497-66-9
 Fraction by Wt: 100%
 OSHA PEL: N/K
 ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation: YES Skin: NO Ingestion: NO
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: MATERIAL IS CONSIDERED TO BE A SLIGHT
 IRRITANT TO THE EYES; MAY ALSO BE IRRITATING TO THE SKIN.
 Explanation of Carcinogenicity: NOT RELEVANT
 Effects of Overexposure: SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
 ASSISTANCE. INHAL: REMOVE FROM EXPOSURE. IF BREATHING STOPS, BEGIN
 MOUTH TO MOUTH. EYES: FLUSH WITH WATER FOR AT LEAST 15 MIN. SKIN:
 WASH AFFECTED AREA WITH SOAP AND WATER. REMOVE DIRTY CLOTHING.
 INGEST: CALL MD IMMEDIATELY .

===== Fire Fighting Measures =====

Extinguishing Media: CO2, FOAM, DRY CHEMICALS, OR CARBON DIOXIDE.

Material Safety Data Sheet

A-C® Oxidized Polyethylene Homopolymers

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: A-C® Oxidized Polyethylene Homopolymers

OTHER/GENERIC NAMES: A-C® 307, 307A, 316, 316A, 325, 330, 392, 395, 395A, 629, 629A, 629P, 629PA, 630P, 630PA, 655, 656, 659, 660, 660A, 670P, 673A, 673P, 680, 680A, 680P, 6702, 6702P

PRODUCT USE: Multiple uses in many applications.

MANUFACTURER: Honeywell International Inc.
101 Columbia Road
P.O. Box 1139
Morristown, New Jersey 07962-1139

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-707-4555

IN CASE OF EMERGENCY CALL:
(24 Hours/Day, 7 Days/Week)
1-800-707-4555 (Honeywell - Domestic)
602-365-4980 (Honeywell - International)
FOR TRANSPORTATION EMERGENCIES:
1-800-424-9300 (CHEMTREC - Domestic)
703-527-3887 (CHEMTREC - International)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Oxidized Polyethylene	68441-17-8	~100

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

While this material is not considered as hazardous under OSHA regulations, the MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A-C 6702 products are grease-like. All other products are white waxy solids in pellet, prill or powder form. Dust from this product may form an explosive mixture in air. Not considered hazardous under normal conditions of use. Can release irritating and/or toxic fumes and vapors if involved in a fire.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

POTENTIAL HEALTH HAZARDS

SKIN: May cause mechanical irritation if the product comes into contact with the skin. Contact with molten material may cause thermal burns.

EYES: May cause mechanical irritation if product comes into contact with the eye.

INHALATION: Not a probable route of exposure under normal conditions of use. Elevated processing temperatures may generate fumes and vapors which may cause irritation to the nose and throat.

INGESTION: Not a probable route of exposure. Not considered hazardous.

DELAYED EFFECTS: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section.			

4. FIRST AID MEASURES

SKIN: If in contact with solid material, wash with soap and water. If in contact with molten material, submerge injured area in cold water. Do not attempt to remove material adhering to the skin. Get medical attention if irritation develops or persists.

EYES: Flush eyes with plenty of water. Get medical attention if irritation develops or persists.

INHALATION: If exposed to dusts or vapors at elevated processing conditions, remove to fresh air. Get medical attention if irritation develops or persists.

INGESTION: Not a probable route of exposure. If person is conscious, rinse mouth with water. Do not induce vomiting unless directed to do so by a physician.

ADVICE TO PHYSICIAN: No specific advice, treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: >490 °F (>255 °C)

FLASH POINT METHOD: Closed cup.

AUTOIGNITION TEMPERATURE: Not determined.

UPPER FLAME LIMIT (volume % in air): Not applicable.

LOWER FLAME LIMIT (volume % in air): Not applicable.

FLAME PROPAGATION RATE (solids): Not determined.

OSHA FLAMMABILITY CLASS: Combustible solid.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

EXTINGUISHING MEDIA:

Use water fog, dry chemical, carbon dioxide or foam as appropriate for materials in surrounding fire. Avoid using direct streams of water on molten burning material as it may scatter and spread the fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Melts in proximity to fires resulting in slippery floors and stairs. ~~Static charges on powders or powders in liquids may ignite combustible atmospheres. Airborne dusts of this product in an enclosed space and in the presence of an ignition source may constitute an explosion hazard. See NFPA Bulletin 654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids" for safe handling procedures.~~

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

As in any fire, wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing. Watch footing on floors and stairs because of possible spreading of molten material.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Avoid generating dust. Keep away from heat or flame. Collect material and place in a container for re-use or disposal. If material is molten, allow to cool. Use caution, as material may still be hot after solidification.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Under conditions of storage, vapors may collect in the headspace of the containers causing a sometimes pungent odor during unpacking of these products. Avoid breathing vapors when opening containers. Avoid spillage which can cause very slippery conditions on floors. Follow standard personal hygiene and housekeeping practices for an industrial environment.

STORAGE RECOMMENDATIONS:

To maintain product quality, store in a cool, dry area, away from direct heat or sunlight. Do not store near strong oxidizing agents and amines.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

General room ventilation is adequate for storage and ordinary handling. Use local exhaust at points of fume generation or if dusty conditions prevail to maintain exposure below the PEL/TLV exposure limits.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Not normally required. Use heat-protective clothing as needed for handling hot material.

EYE PROTECTION:

Wear safety glasses or goggles that conform to ANSI Z87.1 under normal conditions. Wear safety goggles and/or a full-face shield if there is potential for contact with molten material.

RESPIRATORY PROTECTION:

Not required for properly ventilated areas. If there is potential for inhalation of dust or vapor, wear a NIOSH approved respirator.

The respirator must be selected based on contamination levels and use conditions found in the workplace. Use conditions must not exceed the working limits of the respirator. The respirator must be used in accordance with the OSHA respiratory protection standard (29 CFR 1910.134).

ADDITIONAL RECOMMENDATIONS:

Provide safety showers and eyewash stations in close proximity to the work area.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Particulates (insoluble or poorly soluble), Not Otherwise Specified	TWA = 10 mg/m ³ (8-hr day, inhalable fraction), TWA = 3 mg/m ³ (8-hr day, respirable fraction)	TWA = 15 mg/m ³ (8-hr day, total dust), TWA = 5 mg/m ³ (8-hr day, respirable fraction)	None.

- * = Limit established by Honeywell for internal use.
- ** = Workplace Environmental Exposure Level (AIHA).
- *** = Biological Exposure Index (ACGIH).

PEL values represent limits established by the 1989 Air Contaminants Rule (29 CFR 1910.1000, Subpart Z, Table Z-1-A) which was subsequently revoked on June 30, 1993. Several states continue to enforce Table Z-1-A limits.

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: A-C® 6702 products are grease-like, other grades are white pellets, prills or powders.

PHYSICAL STATE: Solid.

ODOR: Characteristic waxy odor.

SPECIFIC GRAVITY (water = 1.0): 0.85 - 1.00

SOLUBILITY IN WATER (weight %): Negligible.

pH: Not applicable.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

BOILING POINT: Not determined.

MELTING POINT: 190 – 294 °F (88 – 140 °C)

VAPOR PRESSURE: Not applicable.

VAPOR DENSITY (air = 1.0): Not applicable.

EVAPORATION RATE: Not determined.

COMPARED TO: Not applicable.

% VOLATILES: Not determined.

FLASH POINT: >490 °F (>255 °C)

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID)

Normally stable. Avoid exposure to open flame or temperatures exceeding recommended processing conditions. Honeywell should be contacted if questions arise concerning specific processing conditions.

INCOMPATIBILITIES:

Strong oxidizing agents and amines.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition products may include carbon monoxide, carbon dioxide and combustion by-products (oxidized and non-oxidized hydrocarbons).

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Oral, rat LD₅₀: >2,500 mg/kg

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

No data available.

OTHER DATA:

None.

12. ECOLOGICAL INFORMATION

No data available. Material is considered inert and not expected to be biodegradable.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? No.

If yes, the RCRA ID number is: Not applicable.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

OTHER DISPOSAL CONSIDERATIONS:

Dispose of in compliance with Federal, state and local government regulations. Disposal options include: recycling, incineration and landfilling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS: Not regulated.

US DOT ID NUMBER: Not applicable.

For additional information on shipping regulations affecting this material, contact the information number found on Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: All components are listed on the TSCA Inventory.

OTHER TSCA ISSUES: None.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
------------------------	----------------------------	--------------------------

No ingredients listed in this section.

Spills resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (1-800-424-8802) and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: None.

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
------------------------	----------------

No ingredients listed in this section.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section.		

ADDITIONAL REGULATORY INFORMATION

FOOD AND DRUG ADMINISTRATION (USA):

See Honeywell Technical Data Bulletin GEN-002 for FDA-related information.

Honeywell does not promote or support the use of its products in applications which are intended for permanent implantation in the human body or in permanent contact with internal bodily tissues or fluids.

WHMIS CLASSIFICATION (CANADA):

Not a controlled product.

FOREIGN INVENTORY STATUS:

All components of this product are listed on the following inventories:

- Australian
- Canadian (DSL)
- Chinese
- European (EINECS)
- Japanese (ENCS)
- Korean
- Philippine (PICCS)

16. OTHER INFORMATION

CURRENT ISSUE DATE: May, 2004

PREVIOUS ISSUE DATE: February, 2004

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

Addition of A-C® 660A to product name list (Section 1).

OTHER INFORMATION:

HMIS® III ratings for the product are as follows:

Health (H)	0
Flammability (F)	1
Physical Hazards (PH)	0

HMIS® III ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Recipients of this MSDS should not employ any recommended HMIS® III ratings in the absence of a fully implemented HMIS® III hazard communication program.

MATERIAL SAFETY DATA SHEET

A-C® Oxidized Polyethylene Homopolymers

The above HMIS® III ratings are from the HMIS® Third Edition. There have been significant changes made to the system since the second edition. "Physical Hazards" or "PH" replaces the former "Reactivity" or "R" rating. For a more detailed explanation of the system and the ratings, please refer to the HMIS® Implementation Manual, Third Edition.

ASIA PACIFIC MICROSPHERES SON,8HD. -- PHENOL FORMALDEHYDE RESIN -- 9330-00-130-0409

===== Product Identification =====

Product ID: PHENOL FORMALDEHYDE RESIN
MSDS Date: 01/01/1996
FSC: 9330
NIIN: 00-130-0409
MSDS Number: CFFCY
=== Responsible Party ===
Company Name: ASIA PACIFIC MICROSPHERES SON, 8HD.
Address: LOT 9 JLAN UTAS 15/7 40000 SHAH ALAM
City: SELANGOR DARUL EHSAN, WEST MALAYSIA
Info Phone Num: 603-559-1801/FAX: 603-550-2168
Emergency Phone Num: 603-559-1801
CAGE: KO160

=== Contractor Identification ===
Company Name: ASIA PACIFIC MICROSPHERES SON, 8HD.
Address: LOT 9 JLAN UTAS 15/7 40000 SHAH ALAM
Box: City: SELANGOR DARUL EHSAN, WEST MALAYSIA
Phone: 603-559-1801/FAX: 603-550-2168
CAGE: KO160
Company Name: EASTTECH CHEMICAL INC (215-537-1000)
Box: UNKNOWN
CAGE: OMN47

===== Composition/Information on Ingredients =====

Ingred Name: PHENOL FORMALDEHYDE RESIN
CAS: 9003-35-4
Fraction by Wt: 100%
Other REC Limits: NONE RECOMMENDED

Ingred Name: PHENOL (SARA 302/313) (CERCLA)
CAS: 108-95-2
RTECS #: SJ3327000
Fraction by Wt: 0.01%
Other REC Limits: NONE RECOMMENDED
OSHA PEL: S, 5 PPM
ACGIH TLV: S, 5 PPM; 9596
EPA Rpt Qty: 1000 LBS
DOT Rpt Qty: 1000 LBS

Ingred Name: FORMALDEHYDE (SARA 302/313) (CERCLA)
CAS: 50-00-0
RTECS #: LP8925000
Fraction by Wt: 0.001%
Other REC Limits: NONE RECOMMENDED
OSHA PEL: SEE 1910.1048
ACGIH TLV: C 0.3 PPM, A2; 9596
EPA Rpt Qty: 100 LBS
DOT Rpt Qty: 100 LBS

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation: YES Skin: YES Ingestion: NO
Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO

Health Hazards Acute and Chronic:INGEST/SKIN ABSORPTION/SKIN CONTACT:NO EVIDENCE OF HARMFUL EFFECTS FROM AVAI INFO.INHAL:SHORT TERM HARMFUL EFFECT NOT EXPECTED FROM VAP GENERATED @AMB TEMPS.EYE:MAY CAUSE IRRIT,EXPERIENCED AS STINGING W/EXCESS BLINKING & TEAR PRODUCTION.REDNESS & SWELLING OF CONJUCTIVA MAY OCUR.

Explanation of Carcinogenicity:PER MSDS:CONTAIN TRACE AMT(<0.001%)OF FREEE FORMALDEHYDE-LISTED BY IARC/NTP/OSHA AS CARCINOGEN.CA PROP 65.

Effects of Overexposure:EYE IRRITATION, STINGING W/EXCESS BLINKING/TEAR PRODUCTION, REDNESS/SWELLING OF CONJUCTIVA.

Medical Cond Aggravated by Exposure:A KNOWLEDGE OF AVAI TOXICOLOGY INFO & PHYSICIAL/CHEM PROPERTIES OF MATLS SUGGEST THAT OVEREXPO IS UNLIKELY TO AGGRAVATE EXISTING MED CONDITIONS.

===== First Aid Measures =====

First Aid:INGEST/INHAL:NO EMERG CARE ANTICIPATED.SKIN:REMOVE CONTAMIN CLOTH.WASH SKIN W/SOAP/WATER.OBTAIN MED ATTN IF IRRIT PERSISTS.EYE:IMMED FLUSH W/WATER & CONTINUE WASHING FOR SEVERAL MINS.OBTAIN MED ATTN I F DISCOMFORT PERSIST.DR:THERE'S NO SPECIFIC ANTIDOTE.TREAT OF OVEREXPO SHOULD BE DIRECTED @CONTROL OT SYMPTOMS/CLINICAL CONDITION OF PATIENT.

===== Fire Fighting Measures =====

Autoignition Temp:Autoignition Temp Text:D

Lower Limits:D

Upper Limits:D

Extinguishing Media:APPLY ALCOHOL TYPE OR ALL PURPOSE TYPD FOAMS BY MFG RECOMMENDED TECHNIQUE FOR LG FIRES.USE CO OR DRY CHEM MEDIA FOR SM.

Fire Fighting Procedures:DO OT DIRECT SOLID STREAM OF WATER OR FOAM INTO BURNING MOLTEN MATL;THIS MAY CAUS SPATTERING & SPREAD OF FIRE.USE SELF-CONTAIN BREATH APPARATUS & PROT CLOTHING.

Unusual Fire/Explosion Hazard:AVOID DISPERSION OF DUST IN AIR TO REDUCE POTENTIAL OF DUST IGN/EXPLOSIONS.FORMALDEHYDE & PHENOL MAY FORM UNDER FIRE CONDITIONS.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR SUITABLE PROTECTIVE CLOTHING.COLLECT FOR DISPOSAL.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:AVOID DISPERSION OF DUST IN AIR;SPARKS/FLAME UNDER DUST CONDITIONS/SKIN CONTACT.USE W/ADEQU VENTI.ELECTR BOND/GROUND ALL EQPMT.SEE DISPO SEC FOR DRYIG

Other Precautions:CONTAIN <0.001% FREE FORMALDEHDYE-SHOULD BE MIN RISK WHEN ADEQUATE VENTI USED DUE TO VERY LOW FORMALDEHYDE CONCEN.MAY UNDERGO SPONT SMOULDER IF STORE/HEAT IN BULK >25C UNDER CONDITIONS ALLOWING AIR IN GRESS TO PROD.STORE PKG IN COOL(SUPPLEM)

===== Exposure Controls/Personal Protection =====

Respiratory Protection:DUST RESPIRATORY IF DUSTING CONDITIONS EXISTS.

Ventilation:SPECIAL LOC VENTI RECOMMENDED IN AREAS WHERE CNTNRS OPENED & CONTENTS DISCHARGE OR IN ANY OTHER AREAS WHERE DUSTING OCCU

Protective Gloves:GENERAL WORKING GLOVES ACCEPTABLE.

Eye Protection:SAFETY GLASSES.

Other Protective Equipment: EYE BATH, SAF SHOWER.
 Work Hygienic Practices: WASH CONTAMIN CLOTH BEF REUSE.
 Supplemental Safety and Health

OTHER PREC: WELL VENTI AREA. DON'T STORE IN SUN/DRY IN PKG-USE SPEC
 DRYING INSTRUCT. MICROSPHERES UNDERGO OXIDATION @ HI TEMP. DUE TO ITS
 EXCELLENT INSULATING CHARACT INTERNAL MASS TEMP CAN INCR TO PT WHE
 RE SPONT IGN/SMOULDER CAN OCCUR. TEMP THIS OCCUR FUNCTION OF
 GEOMETRY, AMT, AVAI OXY. SMOULDER-SOFT GLOW LIKE BURN CHARCOAL.

===== Physical/Chemical Properties =====

HCC: N1
 Boiling Pt: B.P. Text: NA
 Melt/Freeze Pt: M.P/F.P Text: NA
 Decomp Temp: Decomp Text: NP
 Vapor Pres: NA
 Vapor Density: NA
 Spec Gravity: NA
 pH: NP
 Viscosity: NP
 Evaporation Rate & Reference: NP
 Solubility in Water: NONE SPECIFIED.
 Appearance and Odor: HOLLOW SPHERES, RED BRONW COLOR, NO ODOUR SPECIFIED.
 Percent Volatiles by Volume: >WATER
 Corrosion Rate: NP

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
 STRONG OXIDIZING AGENTS, STRONG ACIDS, STRONG ALKALIES, HALOFENS, ACYL
 HALIDES.
 Stability Condition to Avoid: NONE KNOWN. PREVENT DISPERSE OF MATL IN AIR
 TO FORM DUST-ANY FINELY DIVIDED ORG MATL IN AIR CAN IGN/DUST EXPLO.
 Hazardous Decomposition Products: BURNING/THERM DECOMPO CNA PRODUCE
 PHENOL, FORMALDEHYDE, CO (HIGHLY TOXIC IF INHAL) &/OR CO2 (SUFFI CONCE
 ACT AS ASPHYXIAN).

===== Disposal Considerations =====

Waste Disposal Methods: INCINERATE IN FURNACE, OTHERWISE DISPO OF IAW
 APPROPRIATE NAT/LOC REGS. NOT SARA SEC 313/CERCLA CHEMS. DRY: TO
 REDUCE MOISTURE <4%, DRY 2" LAYER @75C MAX 24HRS W/CLOTH (THAT ALLOWS
 MOISTURE EVAPO) OVER MATL .

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ALLIED

HIGH TECH PRODUCTS, INC.

2376 E. Pacifica Place Rancho Dominguez, CA 90220 (800) 675-1118 www.alliedhightech.com

MATERIAL SAFETY DATA SHEET

SECTION 1: NAME OF PRODUCT

PRODUCT NAME: *OneSet Acrylic Powder* ALLIED ITEM NUMBER(S): *185-10000, -10005, -10020, -10030, -10040*

CHEMICAL NAME or PRODUCT TYPE: *Plasticized Methacrylate Polymer*

SECTION 2: COMPOSITION

Chemical Name	Common Name	REG (Y/N)	CAS#	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCIN. (Y/N)
<i>Particulates NOC* < 99%</i>			<i>NE</i>	<i>NE</i>	<i>NE</i>	<i>N</i>
<i>Benzoyl Peroxide < 2 %</i>			<i>97-36-0</i>	<i>NE</i>	<i>NE</i>	<i>N</i>

**Particulates, Not Otherwise Classified (NOC) refers to the United States Occupational Safety and Health Administration (OSHA) classification of the polymer product itself as stated in Section V, Effects of Over Exposure. This classification was formerly called "Nuisance Dust".*

HMIS CODE		
HEALTH	FLAMMABILITY	REACTIVITY
<i>0</i>	<i>1</i>	<i>0</i>

Ingredients are listed on the TSCA Inventory of Chemical Substances. Those not identified are non-hazardous.

SECTION 3: PHYSICAL & CHEMICAL DATA

BOILING POINT: <i>N/A</i>	MELTING POINT: <i>NAIF</i>	SPECIFIC GRAVITY: <i>1.25</i>
VAPOR PRESSURE: <i>N/A</i>	% VOLATILE by VOL./WGT: <i>N/A</i>	VAPOR DENSITY: (AIR=1) <i>N/A</i>
EVAPORATION RATE: <i>N/A</i>	SOLUBILITY in WATER: <i>Insoluble</i>	SOLUBILITY in ALCOHOL: <i>N/A</i>
SOLUBILITY in OTHER SOLVENT: <i>NAIF</i>	APPEARANCE and ODOR: <i>Fine powder - clear, faint odor.</i>	

SECTION 4: FIRE & EXPLOSION HAZARD DATA

FLASH POINT: <i>580°F (304°C)</i>	METHOD USED: <i>Tag Closed</i>	FLAMMABLE LIMITS: LEL: <i>N/A</i> UEL: <i>N/A</i>
EXTINGUISHING MEDIA: <i>Water: Carbon Dioxide: Dry Chemical</i>		

SPECIAL FIRE FIGHTING PROCEDURES: *Avoid extinguishing methods which may generate dust clouds. Water stream can disperse dust in air, producing a fire hazard and possible explosion hazard if exposed to ignition source.*

EXPLOSION POTENTIAL: *Polymer dust is combustible. The explosive limits of the polymer particles suspended in air are approximately those of coal dust. Firefighters should wear self-contained breathing apparatus.*

SECTION 5: HEALTH, FIRST AID, & MEDICAL DATA

ROUTE(S) of ENTRY	ACUTE and CHRONIC HEALTH EFFECTS	FIRST AID and MEDICAL INFORMATION
INHALATION:	<i>Irritation possible</i>	<i>Remove to fresh air. Get medical help if discomfort persists.</i>
INGESTION:	<i>Irritation possible</i>	<i>Rinse mouth out with water. Call doctor if amount was large.</i>
SKIN CONTACT/ABSORPTION:	<i>Irritation possible</i>	<i>Wash with soap and water. Get medical attention if discomfort persists.</i>
EYE:	<i>Irritation possible</i>	<i>Flush with water for 15 minutes, including under lids. Get medical attention if discomfort persists.</i>
OTHER POTENTIAL HEALTH RISK:	<i>NAIF</i>	

LEGEND: *NAIF - Not Applicable Information Found*

OFFICE CODE: *MSDS/SP-63 62 & 63*

Page 2 of 2: *QuickSet Acrylic Powder*

SECTION 6: CORROSIVITY & REACTIVITY DATA

STABILITY: UNSTABLE STABLE POLYMERIZATION: MAY OCCUR WILL NOT OCCUR

INCOMPATIBILITY (MATERIALS to AVOID):

Strong oxidizing agents.

DECOMPOSITION PRODUCTS:

Methacrylate monomer and oxides of carbon when burned

CONDITIONS to be AVOIDED:

Heating above 464° F (240°C)

SECTION 7: STORAGE, HANDLING, & USAGE PROCEDURES

NORMAL STORAGE and HANDLING:

Keep only in original container and store in cool, dry place. Keep container closed to prevent water absorption and contamination.

NORMAL USE:

Wash thoroughly after use and before eating or smoking.

STEPS to be TAKEN in case of LEAKS or SPILLS:

*Sweep up to avoid slipping hazard.
Keep airborne particles at a minimum when cleaning up spills.*

WASTE DISPOSAL METHOD:

*May be disposed of in landfill or incinerated.
Follow federal, state and local regulations for disposal.*

SECTION 8: PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): *Nuisance dust if needed*

VENTILATION { LOCAL: *Local exhaust at processing equipment*
MECHANICAL (GENERAL): *NAIF*
OTHER: *NAIF*

PROTECTIVE GLOVES: *If hot plastic is handled*

EYE PROTECTION: *Safety glasses or chemical splash goggles*

OTHER EQUIPMENT: *None*

SECTION 9: SPECIAL PRECAUTIONS; EMERGENCY OVERVIEW; NOTES

DISCLAIMER: The above information and recommendations are believed accurate and reliable. Because it is not possible to anticipate all conditions of use, additional safety precautions may be required. ALLIED HIGH TECH PRODUCTS, INC. makes no warranty, either express or implied, as to its accuracy or completeness and none is made as to the fitness of this material for any purpose. The manufacturer/distributor shall not be liable for damages to person or property resulting from its use. Nothing herein shall be construed as a recommendation for use in violation of any patent.

FORM PREPARED BY: *Kim Dermitt, July, 2002*

Produced by Allied High Tech Products, Inc. in the USA

ALLIED

HIGH TECH PRODUCTS, INC.

2376 E. Pacifica Place Rancho Dominguez, CA 90220 (800) 675-1118 www.alliedhightech.com

MATERIAL SAFETY DATA SHEET

SECTION 1: NAME OF PRODUCT

PRODUCT NAME: <i>Quick Set Acrylic Liquid</i>	ALLIED ITEM NUMBER(S): 185-10000, -10010, -10025, -10035, -10036
CHEMICAL NAME or PRODUCT TYPE: <i>Isobutyl Methacrylate</i>	

SECTION 2: COMPOSITION

Chemical Name	Common Name	REG (Y/N)	CAS#	OSHA PERMISSIVE EXPOSURE LIMIT	ACGIH TLV	CARCIN. (Y/N)
<i>Isobutyl Methacrylate</i> < 90%			<i>97-86-9</i>	50 ppm	205mg/m ³	N
<i>Trimethylolpropane</i> <i>Trimethacrylate</i> < 20%			<i>3290-92-4</i>	NE	NE	N

HMIS CODE:		
HEALTH	FLAMMABILITY	REACTIVITY
2	2	2

Ingredients are listed on the TSCA Inventory of Chemical Substances. Those not identified are non-hazardous.

SECTION 3: PHYSICAL & CHEMICAL DATA

BOILING POINT: 311°F @ 760mm	MELTING POINT: NAIF	SPECIFIC GRAVITY: 0.891 gr/cc
VAPOR PRESSURE: 3mm/Hg @ 68°F	% VOLATILE by VOL/WGT: 100%	VAPOR DENSITY: 4.91 @ 60°F
EVAPORATION RATE: (BuAc=1) 0.5	SOLUBILITY in WATER: 0.1 gm/100 gm	SOLUBILITY in ALCOHOL: NAIF
SOLUBILITY in OTHER SOLVENT: NAIF	APPEARANCE and ODOR: Purple transparent liquid, fruity odor.	

SECTION 4: FIRE & EXPLOSION HAZARD DATA

FLASH POINT: 120.2°F	METHOD USED: TCC	FLAMMABLE LIMITS: LEL: NAIF UEL: NAIF
EXTINGUISHING MEDIA: Water spray, foam, dry powder or CO2. Keep fire exposed containers cool with spraying water.		
SPECIAL FIRE FIGHTING PROCEDURES: Vapors or gases may travel considerable distance to ignition source and flash back. Full protective equipment, including self-contained breathing apparatus and protective clothing should be used in fire situations.		
EXPLOSION POTENTIAL: Fine mists or sprays may be flammable at temps. below flash point. May polymerize on heating. Sealed containers may rupture explosively if hot.		

SECTION 5: HEALTH, FIRST AID, & MEDICAL DATA

ROUTE(S) of ENTRY	ACUTE and CHRONIC HEALTH EFFECTS	FIRST AID and MEDICAL INFORMATION
INHALATION:	May cause eye, nose and respiratory irritation. May also cause headaches, dizziness, nausea, confusion, staggering gait, and unconsciousness.	Remove patient from exposure, keep warm and at rest. Obtain immediate medical attention.
INGESTION:	May cause irritation and moderate blood changes.	DO NOT induce vomiting. Wash mouth with water and give 200-300ml of water to drink IF conscious. Obtain medical attention
SKIN CONTACT/ABSORPTION:	Repeated or prolonged liquid contact may cause allergic skin rash, itching and swelling.	Wash with soap and water immediately. If irritation occurs, contact a physician
EYE:	Vapor may cause moderate irritation.	Irrigate with eyewash solution or clear water for at least 15 minutes holding eyelids open. Obtain immediate medical attention.
OTHER POTENTIAL HEALTH RISK:	NAIF	

LEGEND: NAIF = No Applicable Information Found
N/A = Not Applicable

OFFICE CODE: MND-1765 64 & 65

Page 2 of 2:

Quick-Set Acrylic Liquid

SECTION 6: CORROSIVITY & REACTIVITY DATA

STABILITY: UNSTABLE STABLE POLYMERIZATION: MAY OCCUR WILL NOT OCCUR

INCOMPATIBILITY (MATERIALS to AVOID):

Reducing and oxidizing agents.

Material has strong solvent properties and can soften paint or rubber.

DECOMPOSITION PRODUCTS:

CO, CO₂, smoke.

CONDITIONS to be AVOIDED:

Excessive heat, inadvertent addition of catalyst, storage in absence of inhibitor.

SECTION 7: STORAGE, HANDLING, & USAGE PROCEDURES

NORMAL STORAGE and HANDLING: *Keep only in original container. Store in cool, dry place away from heat, sparks, flame and direct sunlight. Keep container closed to prevent water absorption and contamination. Keep away from sources of ignition - NO SMOKING. Methacrylate stored in bulk must be kept in contact with air (oxygen).*

NORMAL USE:

Avoid contact with skin and eyes. Avoid inhalation of high concentration of vapors. Use only in well-ventilated areas. The vapor is heavier than air, beware of pits and confined spaces. Take precautionary measures against static discharges. Wash face and hands after using and before eating, drinking, smoking or applying cosmetics.

STEPS to be TAKEN in case of LEAKS or SPILLS: *Eliminate sources of ignition. Ensure suitable personal protection (including respiratory protection) during removal of spillages. Prevent entry into drains. Absorb spillages onto sand, earth or any suitable absorbent material. Do not absorb onto sawdust or other combustible materials. Transfer to a container for disposal or recovery. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.*

WASTE DISPOSAL METHOD:

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface or sanitary sewer system. Incinerate in a facility which complies with Federal, State and local requirements. Do not incinerate in closed containers.

SECTION 8: PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): *When levels exceed 100 ppm, wear self contained breathing apparatus.*

VENTILATION { **LOCAL:** *Sufficient to keep contaminants below applicable OSHA requirements*
MECHANICAL (GENERAL): *NAIF*
OTHER: *NAIF*

PROTECTIVE GLOVES: *PVA/Polyethylene laminate and supported PVA gloves offer the best protection*

EYE PROTECTION: *Safety glasses or chemical splash goggles*

OTHER EQUIPMENT: *Wear suitable protective clothing*

SECTION 9: SPECIAL PRECAUTIONS; EMERGENCY OVERVIEW; NOTES

Combustible: Hazardous Polymerization may occur. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact. High atmospheric concentrations may lead to internal irritation, nausea, vomiting, diarrhea and may lead to drowsiness and unconsciousness. Repeated and/or prolonged contact may cause dermatitis.

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FORM PREPARED BY: *Kim Dermitt, July, 2002*

Produced by Allied High Tech Products, Inc. in the USA

Material Safety Data Sheet

Science Stuff, Inc.
1104 Newport Avenue
Austin, TX 78753

Phone (512) 837-6020
Chemtrec 800-424-9300
24 Hour Emergency Assistance

Section 1 Identification					
Product Number:	C2688	Health:	2		
Product Name:	Sodium Polyacrylate	Flammability:	1		
Trade/Chemical Synonyms:		Reactivity:	0		
Formula:	NA	Hazard Rating: Least Slight Moderate High Extreme 0 1 2 3 4			
RTECS:		NA = Not Applicable NE = Not Established			
C.A.S	CAS#: 025085-02-3				
Section 2 Component Mixture					
Sara 313	Component	CAS Number	%	Dim	Exposure Limits:
	Sodium Polyacrylate	CAS#: 025085-02-3	100%	W/W	
Section 3 Hazard Identification (Also see section 11)					
May be harmful if swallowed. May cause irritation. Avoid breathing vapors, or dusts. Use with adequate ventilation. Avoid contact with eyes, skin, and clothes. Wash thoroughly after handling.					
Section 4 First Aid Measures					
May be harmful if swallowed. May cause irritation. Avoid breathing vapors, or dusts. Use with adequate ventilation. Avoid contact with eyes, skin, and clothes. Wash thoroughly after handling.					
FIRST AID: SKIN: Remove contaminated clothing. Wash exposed area with soap and water. If irritation persists, seek medical attention.					
EYES: Wash eyes with plenty of water for at least 15 minutes, lifting lids occasionally. Seek Medical Aid. INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen					
INGESTION: If swallowed, induce vomiting immediately after giving two glasses of water. Never give anything by mouth to an unconscious person.					
Section 5 Fire Fighting Measures					
Fire Extinguisher Type:	Use water spray, or fog, carbon dioxide or dry chemical.				
Fire/Explosion Hazards:	Dust may be explosive if mixed with air in critical proportions and in the presence of a source of ignition				
Fire Fighting Procedure:	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and clothing.				
Section 6 Accidental Release Measures					
Slippery when wet. Sweep up in containers for disposal. Flush spill area thoroughly with water and scrub to remove residue. Prevent liquid from entering sewers.					
Section 7 Handling and Storage					
Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Store in a cool dry place.					
Section 8 Exposure Controls & Personal Protection					
Respiratory Protection: None required					
Mechanical:		Hand Protection:		Gloves to prevent skin exposure as latex or vinyl	
Ventilation:		Local Exhaust:		Eye splash goggles or face Protection: shield	
Other Protective Equipment: Wear appropriate clothing to prevent skin exposure					
Section 9 Physical and Chemical Properties					
Melting Point:	not applicable	Specific Gravity	0.65 - 0.85		
Boiling Point:	not applicable	Percent Volatile by Volume:	not available		
Vapor Pressure:	not applicable	Evaporation Rate:	not applicable		
Vapor Density:	not applicable	Evaporation Standard:			
Solubility in Water:	swells	Auto ignition Temperature:	Not applicable		
Appearance and Odor:	White odorless solid	Lower Flamm. Limit in Air:	Not applicable		
Flash Point:	not flammable	Upper Flamm. Limit in Air:	Not applicable		
Section 10 Stability and Reactivity Information					
Stability: Stable		Conditions to Avoid: None known			
Materials to Avoid: none known					
Hazardous Decomposition Products: oxides of carbon					
Hazardous Polymerization: Will Not Occur					
Condition to Avoid: None known					
Section 11 Additional Information					
May cause skin and eye irritation. If swallowed, call a physician immediately, if skin contact occurs, wash with plenty of water. In case of eye contact rinse immediately with plenty of water for 15 minutes. Material is not expected to be harmful if inhaled.					
DOT Classification: Not Regulated					
DOT regulations may change from time to time. Please consult the most recent version of the relevant regulations.					
Revision No: 0		Date Entered: 9/8/2004		Approved by: WPF	

The information contained herein is believed to be accurate and is offered in good faith for the user's consideration and investigation. No warranty is expressed or implied regarding the completeness or accuracy of this information, whether originating from Science Stuff, Inc. or from an alternate source. Users of this material should satisfy themselves by independent investigation of current scientific and medical information that this material may be safely handled.

SCIENTIFIC POLYMER PRODUCTS INC -- POLYCARBONATE RESIN, 035 -- 6810-00N046791

===== Product Identification =====

Product ID: POLYCARBONATE RESIN, 035
MSDS Date: 03/01/1992
FSC: 6810
NIIN: 00N046791
MSDS Number: BSVWV
=== Responsible Party ===
Company Name: SCIENTIFIC POLYMER PRODUCTS INC
Address: 6265 DEAN PARKWAY
City: ONTARIO
State: NY
ZIP: 14519
Country: US
Info Phone Num: 716-265-0413
Emergency Phone Num: 716-265-0413
CAGE: 0MWG0

===== Contractor Identification =====

Company Name: SCIENTIFIC POLYMER PRODUCTS INC
Address: 6265 DEAN PARKWAY
Box: City: ONTARIO
State: NY
ZIP: 14519
Country: US
Phone: 716-265-0413
CAGE: 0MWG0

===== Composition/Information on Ingredients =====

Ingred Name: CARBONIC DICHLORIDE POLYL 4,4-(1-METHYLETHYLIDENE) BISPHEN;
(POLY(CARBONATE RESIN))

CAS: 25971-63-5
Fraction by Wt: 100%
OSHA PEL: N/K
ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation: NO Skin: NO Ingestion: NO
Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
Health Hazards Acute and Chronic: FUMES DURING MELTING PROCESSING MAY
CAUSE EYE & SKIN IRRITATION. NO OTHER HUMAN HEALTH EFFECTS ARE
KNOWN TO EXIST.
Explanation of Carcinogenicity: NOT RELEVANT
Effects of Overexposure: SEE HEALTH HAZARDS.
Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL
ASSISTANCE. INGEST: CALL MD IMMEDIATELY. INHAL: REMOVE FROM
EXPOSURE. IF BREATHING STOPS, BEGIN MOUTH TO MOUTH. EYES: FLUSH
W/WATER FOR AT LEAST 15 MINUTES. SKIN: WASH AFFECTED AREA W/SOAP &
WATER. REMOVE DIRTY CLOTHING.

===== Fire Fighting Measures =====

Flash Point:840F,449C

Extinguishing Media:WATER SPRAY OR FOAM. WATER IS RECOMMENDED.

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:WHEN FORCED TO BURN, MATERIAL WILL PRODUCE A SOOTY FIRE & GENERATE BLACK SMOKE

===== Accidental Release Measures =====

Spill Release Procedures:SPILLED PELLETS ARE A SLIPPERY HAZARD & SHOULD BE SWEEPED UP IMMEDIATELY. PLACE IN SUITABLE CONTAINER FOR DISPOSAL.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:PRODUCT WILL NOT DEGRADE DURING STORAGE; MATERIAL SHOULD BE STORED INDOORS TO PROTECT PACKAGING MATERIAL FROM MOISTURE.

Other Precautions:THIS MATERIAL IS INTENDED FOR LABORATORY USE ONLY. IT IS NOT SOLD OR INTENDED FOR DRUG, HOUSEHOLD OR OTHER USES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL EXHAUST ADEQUATE.

Protective Gloves:IMPERVIOUS GLOVES.

Eye Protection:SAFETY GOGGLES.

Other Protective Equipment:EYEBATH &/OR SAFETY SHOWER.

Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:N1

Spec Gravity:1.2-1.6

Solubility in Water:INSOLUBLE

Appearance and Odor:PELLETS; ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

Hazardous Decomposition Products:TRACE LEVELS OF PHENOL, ALKYLPHENOLS & DIACRYLCARBONATES.

===== Disposal Considerations =====

Waste Disposal Methods:LANDFILL OR INCINERATE I/A/W FEDERAL, STATE & LOCAL REGULATIONS.

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MOBIL CHEMICAL COMPANY -- MOBIL POLYETHYLENE (LOPE) -- 9330-00-239-6338

===== Product Identification =====

Product ID: MOBIL POLYETHYLENE (LOPE)
 MSDS Date: 05/27/1997
 FSC: 9330
 NIIN: 00-239-6338
 Status Code: A
 MSDS Number: CJLSC
 === Responsible Party ===
 Company Name: MOBIL CHEMICAL COMPANY
 Address: 15600 JFK BLVD., SUITE 800
 City: HOUSTON
 State: TX
 ZIP: 77032
 Country: US
 Info Phone Num: 800-622-6562/609-737-4411
 Emergency Phone Num: EMER: 609-737-4411 202-483-7616
 Chemtrec Ind/Phone: (800)424-9300
 CAGE: TO265

=== Contractor Identification ===

Company Name: MOBIL CHEMICAL COMPANY
 Address: 15600 JFK BLVD., SUITE 800
 Box: City: HOUSTON
 State: TX
 ZIP: 77032
 Country: US
 Phone: 800-622-6562/609-737-4411
 CAGE: TO265
 Company Name: NEWMAN M. M. CORP
 Address: 24 TIOGA WAY
 Box: 615
 City: MARBLEHEAD
 State: MA
 ZIP: 01945-1575
 Country: US
 Phone: 617-631-8887
 Contract Num: SP0441-97-M-QE16
 CAGE: 09106

===== Composition/Information on Ingredients =====

Ingred Name: POLYETHYLENE

===== Hazards Identification =====

LD50 LC50 Mixture: ORAL (RATS) LD50: >2000 MG/KG.
 Health Hazards Acute and Chronic: THIS PRODUCT DOES NOT CONTAIN
 INGREDIENTS WHICH HAVE EXPOSURE LIMITS ESTABLISHED BY REGULATORY
 AGENCIES. IT IS NOT HAZARDOUS TO HEALTH AS DEFINED BY THE EUROPEAN
 UNION DANGEROUS SUBSTANCES/PREPARATION DIRECTIVES. EYES: DUST MAY
 CAUSE ABRASIVE INJURY AND IRRITATION. SKIN: HOT MATERIAL MAY
 CAUSE BURNS. INHALATION: DUST CAN CAUSE IRRITATION OF NOSE AND
 THROAT.
 Explanation of Carcinogenicity: ORAL TOXICITY (RATS): PRACTICALLY
 NON-TOXIC BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE
 COMPONENTS
 Effects of Overexposure: EYES: IRRITATION, ABRASIVE INJURY FROM DUST.

SKIN: BURNS FROM HOT MATERIAL. INHALATION: NOSE AND THROAT IRRITATION FROM DUST.

===== First Aid Measures =====

First Aid: EYE CONTACT: FLUSH THOROUGHLY WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. IF BURNED BY HOT MATERIAL, COOL MOLTEN MATERIAL ADHERING TO SKIN WITH WATER, GET MEDICAL ATTENTION. EYE CONTACT: FLUSH THOROUGHLY WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. SKIN CONTACT: WASH WITH SOAP AND WATER. IF BURNED, COOL MOLTEN MATERIAL ADHERING TO SKIN WITH WATER, GET MEDICAL ATTENTION. INHALATION: MOVE TO FRESH AIR. IF NOT BREATHING, GIVE CPR. GET MEDICAL ATTENTION. INGESTION: NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE, GET MEDICAL ATTENTION.

===== Fire Fighting Measures =====

Flash Point Method: PMCC
Flash Point: >260.C, 500.F
Lower Limits: NE
Upper Limits: NE

Extinguishing Media: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.

Fire Fighting Procedures: USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURE. PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS, SEWERS, OR DRINKING WATER SUPPLY. FOR FIRES IN ENCLOSED AREAS, FIRE FIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire/Explosion Hazard: AIR CONVEYING (MOVEMENT) OF THIS PRODUCT MAY CAUSE EXCESSIVE DUSTING WHICH COULD FORM EXPLOSIVE DUST-AIR MIXTURES. EXPOSURE TO FIRE CAN GENERATE TOXIC FUMES.

===== Accidental Release Measures =====

Spill Release Procedures: SHOVEL UP WITH SPARK-RESISTANT SHOVEL AND REMOVE TO APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS. PREVENT SPILLS FROM ENTERING STORM SEWERS OR DRAINS AND CONTACT WITH SOIL. FOR ROAD SPILLS, NOTIFY CHEMTREC 800-424-9300. REPORT SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS TO COAST GUARD, 800-424-8802.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions: A STATIC CHARGE CAN BUILD UP WHEN HANDLING THIS PRODUCT AND COULD POSE A DUST EXPLOSION HAZARD. ALL EQUIPMENT SHOULD BE GROUNDED AND BONDED TO PREVENT DUST EXPLOSIONS. THERMODEGRADATION PRODUCTS OF POLYETHYLENE MAY INCLUDE ACETALDEHYDE, FORMIC ACID, ACETIC ACID, AND CARBON MONOXIDE.

Other Precautions: THERMOPROCESSING OF POLYETHYLENE MUST BE PERFORMED IN AN AREA WHERE THERE IS ADEQUATE VENTILATION. STORE IN A COOL AREA.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: APPROVED DUST RESPIRATORS MUST BE USED FOR DUSTY CONDITIONS OR IF DUST LEVELS EXCEED ESTABLISHED STANDARDS. USE APPROVED RESPIRATORY PROTECTIVE EQUIPMENT IN THERMOPROCESSING OPERATIONS IF VENTILATION IS INADEQUATE. NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

Ventilation: VENTILATION DESIRABLE AND EQUIPMENT SHOULD BE EXPLOSION PROOF. USE WITH ADEQUATE VENTILATION IN THERMOPROCESSING OPERATIONS.

Protective Gloves: GLOVES AS REQUIRED TO HANDLE HOT MATERIALS.

Eye Protection: GOGGLES AND/OR FACE SHIELD AS NEEDED.

Supplemental Safety and Health

THIS PRODUCT DOES NOT CONTAIN ANY COMPONENTS WHICH HAVE RECOGNIZED EXPOSURE LIMITS. HOWEVER, A THRESHOLD LIMIT VALUE OF 5.00 MG/M3 IS SUGGESTED FOR NUISANCE DUSTS.

===== Physical/Chemical Properties =====

HCC:V5

Melt/Freeze Pt: =110.C, 230.F

Spec Gravity: 0.918-0.923

Solubility in Water: NEGLIGIBLE

Appearance and Odor: PELLETS. TRANSLUCENT. MILD ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES

STRONG OXIDIZERS.

Stability Condition to Avoid: EXTREME HEAT.

Hazardous Decomposition Products: CARBON MONOXIDE. ALDEHYDES. ACETIC ACID.

Conditions to Avoid Polymerization: WILL NOT OCCUR.

===== Toxicological Information =====

Toxicological Information: ORAL TOXICITY (RATS): LD50 >2000MG/KG. BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS. DERMAL TOXICITY (RABBITS): LD50 >2000 MG/KG. BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS. INHALATION TOXICITY (RATS): LC50 >5MG/L. BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS. EYE IRRITATION (RABBITS): DRAIZE SCORE: 0 OR GREATER BUT 5 OR LESS. BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS. SKIN IRRITATION (RABBITS) PRIMARY IRRITATION INDEX: 0.5 OR LESS. BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

===== Ecological Information =====

Ecological: ENVIRONMENTAL FATE AND EFFECTS: NOT ESTABLISHED.

===== Disposal Considerations =====

Waste Disposal Methods: PRODUCT MAY BE RECYCLED BY AN APPROVED RECYCLING FACILITY OR DISPOSE OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. BOTH METHODS ARE SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. USED PRODUCT MAY BE REGULATED UNDER RCRA.

===== MSDS Transport Information =====

Transport Information: USA DOT: NOT REGULATED BY USA DOT. IMO: NOT REGULATED BY IMO. IATA: NOT REGULATED BY IATA.

===== Regulatory Information =====

SARA Title III Information: THIS PRODUCT CONTAINS NO "EXTREMELY HAZARDOUS SUBSTANCES". THIS PRODUCT CONTAINS NO CHEMICALS REPORTABLE UNDER SARA (313) TOXIC RELEASE PROGRAM.

Federal Regulatory Information: GOVERNMENTAL INVENTORY STATUS: ALL COMPONENTS COMPLY WITH TSCA, AICS, AND OSL.

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AMOCO CHEMICALS CO -- POLYPROPYLENE -- 6810-00N059378

===== Product Identification =====

Product ID: POLYPROPYLENE
 MSDS Date: 10/16/1985
 FSC: 6810
 NIIN: 00N059378
 MSDS Number: BXQLY
 === Responsible Party ===
 Company Name: AMOCO CHEMICALS CO
 Address: 200 EAST RANDOLPH DR
 City: CHICAGO
 State: IL
 ZIP: 60601
 Country: US
 Info Phone Num: 312-851-5004
 Emergency Phone Num: 800-447-8735; 800-424-9300 (CHEMTREC)
 Preparer's Name: STEPHEN A. ELBERT
 CAGE: 15965

===== Contractor Identification =====

Company Name: AMOCO CHEMICALS CORP
 Address: 200 E RANDOLPH DR MC 4001
 Box: City: CHICAGO
 State: IL
 ZIP: 60601-6401
 Country: US
 CAGE: 15965

===== Composition/Information on Ingredients =====

Ingred Name: PROPENE POLYMERS; (POLYPROPYLENE)
 CAS: 9003-07-4
 RTECS #: UD1842000
 OSHA PEL: N/K
 ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: LD50: (ORAL, RAT) >34,600 MG/KG.
 Routes of Entry: Inhalation: NO Skin: NO Ingestion: NO
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: EYE: NONE EXPECTED OTHER THAN POSSIBLE
 MECHANICAL IRRITATION. SKIN/INHAL: NONE EXPECTED UNDER NORMAL
 CONDITIONS OF USE. INGEST: EXPECTED TO BE RELATIVELY NON-TOXIC.
 Explanation of Carcinogenicity: NOT RELEVANT
 Effects of Overexposure: SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure: NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid: INGEST: CALL MD IMMEDIATELY . INHAL: REMOVE TO FRESH AIR.
 SUPPORT BREATHING (GIVE O*2/ARTF RESP) . SKIN: FLUSH W/COPIOUS
 AMOUNTS OF WATER. CALL MD . EYES: FLUSH W/PLENTY OF WATER FOR AT
 LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

===== Fire Fighting Measures =====

Flash Point: 690F, 366C

Extinguishing Media:AGENTS APPROVED FOR CLASS A HAZARDS (E.G.,
 HALOGENATED AGENTS, FOAM, STEAM) OR WATER FOG.
 Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE
 EQUIPMENT .
 Unusual Fire/Explosion Hazard:NONE.

===== Accidental Release Measures =====

Spill Release Procedures:CONTAIN & REMOVE BY MECHANICAL MEANS.
 Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:NO SPECIAL STORAGE REQUIREMENTS.
 Other Precautions:NONE SPECIFIED BY MANUFACTURER.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR
 EXPOSURE OF CONCERN .
 Ventilation:LOCAL EXHAUST VENT SHOULD BE USED TO DISPOSE OF VAPORS FROM
 HOT PROCESSING EQUIPMENT, PARTICULARLY DURING PURGING.
 Protective Gloves:IMPERVIOUS GLOVES .
 Eye Protection:ANSI APPROVED SAFETY GLASSES .
 Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.
 Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
 Supplemental Safety and Health
 NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:330F,166C
 Spec Gravity:0.9 (H*2O=1)
 Solubility in Water:NEGLIGIBLE, <0.1%.
 Appearance and Odor:ODORLESS WHITE PELLETS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
 NONE IDENTIFIED.
 Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
 Hazardous Decomposition Products:INCOMPLETE BURNING CAN PRODUCE CARBON
 MONOXIDE, CARBON DIOXIDE & OTHER HARMFUL PRODUCTS.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE I/A/W APPLICABLE FEDERAL, STATE
 OR LOCAL REGULATIONS. DETERMINE WASTE CLASSIFICATIONS AT TIME OF
 DISP. CNDTNS OF USE MAY RENDER SPENT PROD A HAZ WASTE.
 ENCLSD-CONTROLLED INCIN IS REC UNLESS DIRECTED OTHERWISE BY APPLIC
 ORDINANCES.

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 assume responsibility for the suitability of this information to their
 particular situation.

PRESSURE CHEMICAL CO -- POLYSTYRENE STANDARD -- 6810-00F046511

===== Product Identification =====

Product ID: POLYSTYRENE STANDARD
 MSDS Date: 09/20/1989
 FSC: 6810
 NIIN: 00F046511
 MSDS Number: BYNBN
 === Responsible Party ===
 Company Name: PRESSURE CHEMICAL CO
 Address: 3419-25 SMALLMAN ST
 City: PITTSBURGH
 State: PA
 ZIP: 15201-5000
 Country: US
 Info Phone Num: 412-682-5882
 Emergency Phone Num: 412-682-5882
 CAGE: 2H482

===== Contractor Identification =====

Company Name: PRESSURE CHEMICAL CO
 Address: 3419-25 SMALLMAN ST
 City: PITTSBURGH
 State: PA
 ZIP: 15201-5000
 Country: US
 Phone: 412-682-5882
 CAGE: 2H482

===== Composition/Information on Ingredients =====

Ingred Name: STYRENE POLYMER, POLYSTYRENE, STYRON (CARCINOGEN BY IARC
 GROUP-3) *95-4*
 CAS: 9003-53-6
 RTECS #: WL6475000

===== Hazards Identification =====

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Explanation of Carcinogenicity: NONE

===== First Aid Measures =====

First Aid: SKIN: IMMEDIATELY WASH W/COPIOUS AMOUNTS OF WATER. OBTAIN
 MEDICAL ATTENTION IN ALL CASES. NOTES TO PHYSICIAN: THE
 TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

===== Fire Fighting Measures =====

Extinguishing Media: WATER/CO2/DRY CHEMICAL
 Fire Fighting Procedures: WEAR OSHA/MSHA SCBA. WEAR PROTECTIVE CLOTHING
 TO PREVENT CONTACT W/SKIN & EYES.
 Unusual Fire/Explosion Hazard: OXYGEN-LEAN CONDITIONS DURING COMBUSTION
 MAY PRODUCE CO & IRRITATING SMOKE.

===== Accidental Release Measures =====

Spill Release Procedures: SWEEP UP, PLACE IN BAG FOR WASTE DISPOSAL.

AVOID RAISING DUST.

=====
===== Handling and Storage =====

Handling and Storage Precautions:STORE AT AMBIENT TEMPERATURE.
Other Precautions:EATING, DRINKING, SMOKING & CARRYING OF TOBACCO
PRODUCTS SHOULD BE PROHIBITED IN AREAS WHERE THERE IS POTENTIAL
EXPOSURE TO MATERIAL. ALL FOOD SHOULD BE KEPT IN A SEPERATE AREA,
AWAY FROM WORKING LOCA TION.

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:WEAR OSHA APPROVED RESPIRATOR.
Ventilation:ADEQUATE
Protective Gloves:RECOMMENDED
Eye Protection:CHEMICAL SAFETY GOGGLES
Work Hygienic Practices:REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE
REUSE. WASH THOROUGHLY AFTER HANDLING.
Supplemental Safety and Health

=====
===== Physical/Chemical Properties =====

Solubility in Water:INSOLUBLE
Appearance and Odor:WHITE POWDER

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZERS
Stability Condition to Avoid:THERMAL DECOMPOSITION
Hazardous Decomposition Products:CO/CO2

=====
===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE IAW/FEDERAL, STATE & LOCAL REGULATIONS.

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document should seek competent professional advice to verify and
assume responsibility for the suitability of this information to their
particular situation.

FOAMEX -- POLYURETHANE FOAM -- 9330-00N069802

===== Product Identification =====

Product ID: POLYURETHANE FOAM
 MSDS Date: 12/01/1991
 FSC: 9330
 NIIN: 00N069802
 MSDS Number: CBKWF
 === Responsible Party ===
 Company Name: FOAMEX
 Address: 1500 E SECOND STREET
 City: EDDYSTONE
 State: PA
 ZIP: 19013
 Country: US
 Info Phone Num: 215-499-7824
 Emergency Phone Num: 215-499-7824
 CAGE: JO316

===== Contractor Identification =====

Company Name: FOAMEX
 Address: 1500 E SECOND STREET
 Box: City: EDDYSTONE
 State: PA
 ZIP: 19013
 Country: US
 Phone: 215-499-7824
 CAGE: JO316
 Company Name: SCOTT PAPER CO
 Address: 1500 E 2ND STREET
 Box: City: EDDYSTONE
 State: PA
 ZIP: 19013-6728
 Country: US
 Phone: 215-499-7824
 CAGE: 1M781

===== Composition/Information on Ingredients =====

Ingred Name: NONE - MATERIAL IS FULL CROSS-LIKED REACTION PRODUCT OF
 INGREDIENTS 2 - 7.
 RTECS #: 9999999ZZ

Ingred Name: POLYHYDROXY POLYOL
 OSHA PEL: N/K
 ACGIH TLV: N/K

Ingred Name: BENZENE, 2,4-DIISOCYANATO-1-METHYL-; (TOLUENE
 DI-ISOCYANATE)
 CAS: 584-84-9
 RTECS #: CZ6300000
 OSHA PEL: N/K
 ACGIH TLV: N/K
 EPA Rpt Qty: 100 LBS
 DOT Rpt Qty: 100 LBS

Ingred Name: CATALYSTS
 OSHA PEL: N/K
 ACGIH TLV: N/K

Ingred Name: SURFACTANTS
 OSHA PEL: N/K
 ACGIH TLV: N/K

Ingred Name: PIGMENTS
 OSHA PEL: N/K
 ACGIH TLV: N/K

Ingred Name: WATER
 CAS: 7732-18-5
 RTECS #: ZC0110000
 OSHA PEL: N/K
 ACGIH TLV: N/K

===== Hazards Identification =====

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
 Routes of Entry: Inhalation: YES Skin: NO Ingestion: NO
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: INHAL: DUST FROM CUTTING CAN BE
 NUISANCE DUST. SKIN/EYES: CAN CAUSE MECHANICAL IRRITATION.
 TEMPERATURES OVER 350F MAY GENERATE TOXIC OR RESPIRATORY IRRITANTS.
 Explanation of Carcinogenicity: NOT RELEVANT.
 Effects of Overexposure: SEE HEALTH HAZARDS.
 Medical Cond Aggravated by Exposure: NONE KNOWN.

===== First Aid Measures =====

First Aid: INHAL: REMOVE TO FRESH AIR. CONSULT MD IF RESPIRATORY
 PROBLEMS PERSIST; EYE IRRIT FROM POWDER - WASH WELL. SKIN: FLUSH
 W/COPIOUS AMOUNTS OF WATER. SEE MD. EYE: FLUSH W/POTABLE WATER FOR
 AT LEAST 15 MINUTES. SEE MD. INGEST: CALL MD IMMEDIATELY.

===== Fire Fighting Measures =====

Flash Point: >500F, >260C
 Lower Limits: NONE
 Upper Limits: NONE
 Extinguishing Media: DRY CHEMICAL, WATER, CARBON DIOXIDE.
 Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED SCBA & FULL
 PROTECTIVE EQUIPMENT.
 Unusual Fire/Explosion Hazard: FOAM CAN EMIT COMBUSTIBLE GASES MAKING
 FLASHBACK POSSIBLE. FOAM WILL BURN W/HIGH HEAT, EVOLUTION OF BLACK
 SMOKE, FLAMING DROPLETS AND TOXIC PRODUCTS.

===== Accidental Release Measures =====

Spill Release Procedures: SWEEP UP - NO SPECIAL STEPS NEEDED.
 Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions: LARGE QUANTITIES SHOULD BE STORED IN
 WELL SPRINKLERED AREAS AWAY FROM HEAT OR OPEN FLAMES.
 Other Precautions: NOTIFY LOCAL FIRE COMPANIES OF PRESENCE OF LARGE QTYS
 OF FOAM.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPRVD ORGANIC VAPOR CARTRIDGES;
DUSTS USE DUST MASK.
Ventilation:LOCAL EXHAUST NEEDED FOR HOT WIRE CUTTING OR FLAME
LAMINATION.
Protective Gloves:IMPERVIOUS GLOVES.
Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS.
Other Protective Equipment:EMERGENCY EYEWASH & DELUGE SHOWER MEETING
ANSI DESIGN CRITERIA. DUST COLLECTION EQUIPMENT DURING BUFFING.
Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
MELTING PT: DECOMPOSES 350F - 375F.

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:SUPDAT
Vapor Pres:NONE
Vapor Density:NONE
Evaporation Rate & Reference:NONE
Solubility in Water:INSOLUBLE
Appearance and Odor:UNIFORM CELLULAR STRUCTURE W/SLIGHT, CHARACTERISTIC
ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OZIDIZING ACIDS-WILL DEGRADE.
Stability Condition to Avoid:HIGH TEMPERATURES, OPEN FLAMES, STRONG
OXIDIZERS.
Hazardous Decomposition Products:CARBON MONOXIDE, OXIDES OF NITROGEN,
HYDROGEN CYANAIDE, ACRYLONITRILE.

===== Disposal Considerations =====

Waste Disposal Methods:LANDFILL OR INCINERATE. DISPOSE OF IN ACCORDANCE
W/LOCAL, STATE & FEDERAL REGULATIONS.

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particular situation.

MSDS Number: P5282 * * * * * *Effective Date: 05/14/03* * * * * * *Supercedes: 11/02/01*



Material Safety Data Sheet

From: ~~Mallinckrodt Baker, Inc.~~
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-8666

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

POLYVINYL ALCOHOL

1. Product Identification

Synonyms: Polyvinyl alcohol; PVA; Polyvinol; ethenol homopolymer

CAS No.: 9002-89-5

Molecular Weight: Not applicable to mixtures.

Chemical Formula: [-CH₂CHOH-]_n

Product Codes: U227, U228, U229, U232

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Alcohol	67-56-1	< 1%	No
Polyvinyl Alcohol	9002-89-5	> 95%	Yes

3. Hazards Identification

Emergency Overview

**CAUTION! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.
NUISANCE DUST.**

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

~~Health Rating: 0 - None~~

~~Flammability Rating: 2 - Moderate~~

~~Reactivity Rating: 0 - None~~

Contact Rating: 0 - None

Lab Protective Equip: GOGGLES; LAB COAT; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Dust may be formed under certain conditions of use. Treat as a nuisance dust. When heated above 200C, fumes irritating the eyes nose, throat will be evolved. Symptoms may include tears in the eyes with itching, redness, burning pain in throat and nose.

Ingestion:

Not expected to be a health hazard via ingestion.

Skin Contact:

Not expected to be a health hazard from skin exposure.

Eye Contact:

Mechanical irritation only.

Chronic Exposure:

No human data. Animal studies showed a drop in hemoglobin and erythrocyte (red blood cell) number with eventual complete coagulation inhibition. There is the possibility of carcinogenicity as seen in some animal studies.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Not expected to require first aid measures.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

Flash point: 79C (174F) OC

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source. Minimum dust cloud ignition temperature: 450C (842F).

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Maximum explosion pressure: 78 lb./sq. in.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and

equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. ~~Avoid dust formation and control ignition sources.~~ Employ grounding, venting and explosion relief provisions in accord with accepted engineering practices in any process capable of generating dust and/or static electricity. Empty only into inert or non-flammable atmosphere. Emptying contents into a non-inert atmosphere where flammable vapors may be present could cause a flash fire or explosion due to electrostatic discharge.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles.

9. Physical and Chemical Properties

Appearance:

White free-flowing granules.

Odor:

Mild odor.

Solubility:

Moderately soluble.

Specific Gravity:

1.19 - 1.31

pH:

Aqueous solution is neutral or slightly acid.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

No information found.

Melting Point:

ca. 200C (ca. 392F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Complete combustion will emit carbon dioxide and water when heated to decomposition. Incomplete combustion gives in addition carbon monoxide and oxidation products, including organic acids, aldehydes and alcohol.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers.

Conditions to Avoid:

Heat, flame, ignition sources, dusting and incompatibles.

11. Toxicological Information

Oral rat LD50: > 20 gm/kg. Investigated as a tumorigen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Methyl Alcohol (67-56-1)	No	No	None
Polyvinyl Alcohol (9002-89-5)	No	No	3

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local

disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes
Polyvinyl Alcohol (9002-89-5)	Yes	No	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Methyl Alcohol (67-56-1)	Yes	Yes	No	Yes
Polyvinyl Alcohol (9002-89-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Methyl Alcohol (67-56-1)	No	No	Yes	No
Polyvinyl Alcohol (9002-89-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	-RCRA-		-TSCA-
	CERCLA	261.33	8(d)
Methyl Alcohol (67-56-1)	5000	U154	No
Polyvinyl Alcohol (9002-89-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: No Chronic: No Fire: Yes Pressure: No
Reactivity: No (Mixture / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 2 Reactivity: 0

Label Hazard Warning:

CAUTION! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.
NUISANCE DUST.

Label Precautions:

Store in a tightly closed container.

Avoid breathing dust.

~~Avoid dust cloud in presence of an ignition source.~~

Maintain adequate ventilation.

Label First Aid:

Not applicable.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

HUMMEL CROTON INC

-- POLYVINYL CHLORIDE

===== MSDS Safety Information =====

FSC: 6810

MSDS Date: 12/12/1996

MSDS Num: CJNZH

LIIN: 00N091726

Product ID: POLYVINYL CHLORIDE

MFN: 01

Responsible Party

Cage: 60728

Name: HUMMEL CROTON INC

Address: 10 HARMICH ROAD

City: SOUTH PLAINFIELD NJ 07080

Info Phone Number: 908-754-1800

Emergency Phone Number: (800)424-9300

Preparer's Name: MARK DUGAN

Chemtrec IND/Phone: (800)424-9300

Review Ind: Y

Published: Y
=====

Contractor Summary =====

Cage: 60728

Name: HUMMEL CROTON INC

Address: 10 HARMICH ROAD

City: SOUTH PLAINFIELD NJ 07080

Phone: 908-754-1800
=====

Item Description Information =====

Ingredients =====

Cas: 9002-86-2

RTECS #: KV0350000

Name: POLY(VINYL CHLORIDE)

Percent by Wt: 99.

Cas: 117-81-7

RTECS #: TI0350000

Name: BIS(2-ETHYLHEXYL) PHTHALATE LD50: (ORAL, RAT) 30,500 MG/KG

< Wt: 1.

OSHA PEL: 5 MG/M3

ACGIH TLV: 5 MG/M3

ACGIH STEL: 10 MG/M3

EPA Rpt Qty: 100 LBS

DOT Rpt Qty: 100 LBS

Cas: 75-01-4

RTECS #: KU9625000

Name: VINYL CHLORIDE MONOMER % WT: LESS THAN 8.5 PPM

< Wt: .1

OSHA PEL: see 1910.1017

ACGIH TLV: 13 MG/M3;5 PPM

ACGIH STEL: NOT ESTABLISHED

EPA Rpt Qty: 1 LB

DOT Rpt Qty: 1 LB
=====

Health Hazards Data

=====
 LD50 LC50 Mixture: SEE INGREDIENT 2
 Route Of Entry Inds - Inhalation: YES
 Skin: YES
 Ingestion: YES
 Carcinogenicity Inds - NTP: YES
 IARC: YES
 OSHA: NO

Effects of Exposure: ACUTE: INHALATION: MAY IRRITATE THE RESPIRATORY TRACT. SYMPTOMS MAY INCLUDE COUGHING, SHORTNESS OF BREATH, SORE THROAT AND RUNNY NOSE. IF SUFFICIENT AMOUNTS ARE INHALED AND ABSORBED, SYMPTOMS MAY RESEMBLE THOSE IN ACUTE INGESTION. SKIN: SKIN CONTACT MAY CAUSE IRRITATION WITH SYMPTOMS OF REDNESS, SWELLING ITCHING AND PAIN. EYE CONTACT: MAY CAUSE IRRITATION WITH SYMPTOMS OF REDNESS, SWELLING, ITCHING, TEARING AND PAIN. INGESTION: MAY CAUSE GASTROENTERITIS (INFLAMMATION OF THE LINING MEMBRANE OF THE STOMACH AND INTESTINES) WITH ABDOMINAL PAIN, NAUSEA, VOMITING AND DIARRHEA. SYSTEMIC EFFECTS MAY FOLLOW AND MAY (EFFECTS OF OVEREXPOSURE)

Explanation Of Carcinogenicity: PHTHALIC ACID, BIS(2-ETHYLHEXYL) ESTER: IARC MONOGRAPHS, SUPPLEMENT, VOLUME 7, PAGE 56, 1987:GROUP 2B. NTP 8TH ANNUAL REPORT ON CARCINOGENS, 1998: REASONABLY ANTICIPATED TO BE HUMAN CARCINOGEN.

Signs And Symptoms Of Overexposure: HEALTH HAZARDS: INCLUDE RINGING OF THE EARS, DIZZINESS, ELEVATED BLOOD PRESSURE, BLURRED VISION AND TREMORS. CARCINOGENICITY: THIS PRODUCT IS NOT LISTED BY NTP, IARC OR REGULATED AS A CARCINOGEN BY OSHA. TWO OF POLYVINYL CHLORIDE'S IMPURITIES ARE LISTED AS CARCINOGENS. VINYL CHLORIDE MONOMER IS A OSHA CANCER SUSPECT AGENT, ACGIH CONFIRMED HUMAN CARCINOGEN AND NTP AND IARC HUMAN CARCINOGEN. (POLYVINYL CHLORIDE CONTAINS LESS THAN 8.5 PPM.)

Medical Cond Aggravated By Exposure: PERSONS WITH PREEXISTING EYE OR SKIN CONDITIONS OR IMPAIRED PULMONARY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS PRODUCT.

First Aid: EYES: IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. SKIN: IN CASE OF CONTACT, FLUSH SKIN WITH WATER. WASH CLOTHING BEFORE REUSE. CALL A PHYSICIAN IF IRRITATION OCCURS. INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN. INGESTION: IF SWALLOWED, CALL A PHYSICIAN IMMEDIATELY.

=====
 Handling and Disposal

Spill Release Procedures: UTILIZE RECOMMENDED PROTECTIVE CLOTHING AND EQUIPMENT. CLEAN SPILLS IN A MANNER THAT DOES NOT DISPERSE DUST INTO THE AIR. SPILL AREA CAN BE WASHED WITH WATER. COLLECT WASH WATER FOR APPROVED DISPOSAL. KEEP FROM ENTERING WATER OR GROUND WATER.

Waste Disposal Methods: WASTE DISPOSAL SHOULD BE IN ACCORDANCE WITH EXISTING FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

Handling And Storage Precautions: STORAGE TEMPERATURE (MIN/MAX): AMBIENT/AMBIENT. SHELF LIFE: UNLIMITED IN TIGHTLY CLOSED CONTAINER. SPECIAL SENSITIVITY:NONE. STORE IN A DRY PLACE AWAY FROM DIRECT SUNLIGHT, HEAT & INCOMPATIBLE MATERIALS (SEE REACTIVITY DATA). RESEAL CONTAINERS IMMEDIATELY AFTER USE. STORE AWAY FROM FOOD & BEVERAGES.

Other Precautions: AVOID BREATHING DUST. AVOID GETTING IN EYES OR ON SKIN. WASH THOROUGHLY AFTER HANDLING.

=====
 Fire and Explosion Hazard Information

Flash Point: =391.C, 735.8F
 Flash Point Text: ASTM D1929
 Extinguishing Media: WATER SPRAY.

Fire Fighting Procedures: USE NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). DO NOT DIRECT A SOLID STREAM OF WATER OR FOAM INTO BURNING MOLTEN MATERIAL; THIS MAY CAUSE SPATTERING AND SPREAD THE FIRE.

=====
Control Measures
=====

Respiratory Protection: WORK AMBIENT CONCENTRATIONS SHOULD BE MONITORED AND IF THE RECOMMENDED EXPOSURE LIMIT IS EXCEEDED, A NIOSH APPROVED DUST RESPIRATOR MUST BE WORN.

Ventilation: USE LOCAL VENTILATION IF DUSTING IS A PROBLEM, TO MAINTAIN AIR LEVELS BELOW THE RECOMMENDED EXPOSURE LIMIT.

Protective Gloves: PVC GLOVES.

Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: EYE WASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N). IMPERVIOUS BOOTS, APRON OR COVERALLS. EMPLOYEES SHOULD WASH THEIR HANDS AND FACE BEFORE EATING, DRINKING OR USING TOBACCO PRODUCTS.

Work Hygienic Practices: EDUCATE AND TRAIN EMPLOYEES IN THE SAFE USE AND HANDLING OF HAZARDOUS CHEMICALS.

=====
Physical/Chemical Properties
=====

B.P. Text: NOT ESTABLISHED

Spec Gravity: 1.40 +/- 0.02

Viscosity: NOT ESTABLISHED

Solubility in Water: INSOLUBLE

Appearance and Odor: WHITE FREE FLOWING POWDER; ODORLESS.

=====
Reactivity Data
=====

Stability Indicator: YES RAPID DEGRADATION.

Stability Condition To Avoid: EXCESSIVE TEMPERATURES. PROLONGED HEATING OF PRODUCT ABOVE 200C OR SHORT TERM HEATING ABOVE 250C MAY RESULT IN RAPID EVOLUTION OF HYDROGEN CHLORIDE. (SEE MATERIALS TO AVOID.)

Materials To Avoid: AVOID CONTACT WITH STRONG OXIDIZERS. ALSO, AVOID CONTACT WITH ACETAL OR ACETAL COPOLYMERS AND WITH AMINE CONTAINING MATERIALS DURING PROCESSING. AT PROCESSING CONDITIONS, THESE MATERIALS ARE MUTAULLY DESTRUCTIVE AND INVOLVE

Hazardous Decomposition Products: HYDROGEN CHLORIDE, CARBON MONOXIDE, CARBON DIOXIDE AND SMALL AMOUNTS OF BENZENE AND AROMATIC AND ALIPHATIC HYDROCARBONS.

Hazardous Polymerization Indicator: NO

=====
Toxicological Information
=====

Toxicological Information: TOX DATA FOR POLYVINYL CHLORIDE: TLV NOT ESTABLISHED. ACUTE EFTS: NO ADVERSE HEALTH EFTS ARE ANTIC FROM THIS PROD AT AMBIENT TEMP OTHER THAN ITEMS STATED IN HEALTH DATA SECTION. CHRONIC: VINYL RESIN H AS LITTLE EFT ON LUNGS & IS NOT KNOWN TO CAUSE ANY DISEASE WHEN DUST EXPOS IS MINIMIZED. ROUTINE INHAL OF DUST OF ANY KIND SHOULD BE AVOIDED. TOX DATA FOR BIS(2-ETHYLHEXYL) PHTHALATE: IT IS NTP ANTIC HUMAN CARCIN & IARC POSS HUMAN CARCIN. TOX DATA FOR VINYL CHLORIDE MONOMER: LD50 (RAT, INHAL) 18 PPH/15M. VINYL CHLORIDE MONOMER IS OSHA CANCER SUSPECT AGENT, ACHIH CONFIRMED HUMAN CARCIN & NTP & IARC HUMAN CARCIN. NOTE: (OTHER INFO)

=====
Ecological Information
=====

Ecological: DATA NOT AVAILABLE AT THE PRESENT TIME.

=====
MSDS Transport Information
=====

Transport Information: CONTACT HUMMEL CROTON FOR CURRENT SHIPPING INFORMATION.

=====
 Regulatory Information
 =====

Sara Title III Information: BIS(2-ETHYLHEXYL)PHTHALATE AND VINYL CHLORIDE
 MONOMER: INGREDIENT LISTED ON SARA SECTION 313 LIST OF TOXIC CHEMICALS.

Federal Regulatory Information: OSHA STATUS: THIS PRODUCT IS HAZARDOUS UNDER
 THE CRITERIA OF THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD 29 CFR
 1910.1200. TSCA STATUS: ON TSCA INVENTORY. BIS(2-ETHYLHEXYL)PHTHALATE AND
 VINYL CHLORIDE MONOMER LISTED ON CANADA'S INGREDIENT DISCLOSURE LIST.
 EUROPEAN INFO - CAUTION: SUBSTANCE NOT YET FULLY TESTED. IRRITANT. R 36/37/38
 IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN. S 26 IN CASE OF CONTACT
 WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE. S
 36 WEAR SUITABLE PROTECTIVE CLOTHING.

State Regulatory Information: BIS(2-ETHYLHEXYL)PHTHALATE AND VINYL CHLORIDE
 MONOMER: INGREDIENT LISTED ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST.
 INGREDIENT LISTED ON CALIFORNIA PROPOSITION 65. INGREDIENT LISTED ON THE
 MASSACHUSETTS SUBSTANCE LIST.

=====
 Other Information
 =====

Other Information: REASON FOR ISSUE: UPDATE ONTO NEW FORMAT. SUPDAT: MONOMER
 EXISTS IN CONCENTRATIONS LESS THAN 8.5 PPM. TOXICOLOGICAL INFORMATION: ONLY
 SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS
 PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR COMPLETE INFORMATION.

=====
 HAZCOM Label
 =====

Product ID: POLYVINYL CHLORIDE

Cage: 60728

Company Name: HUMMEL CROTON INC

Street: 10 HARMICH ROAD

City: SOUTH PLAINFIELD NJ

Zipcode: 07080

Health Emergency Phone: (800)424-9300

Label Required IND: Y

Date Of Label Review: 08/04/1999

Status Code: A

Origination Code: F

Chronic Hazard IND: Y

Eye Protection IND: YES

Skin Protection IND: YES

Signal Word: WARNING

Respiratory Protection IND: YES

Health Hazard: Moderate

Contact Hazard: Moderate

Fire Hazard: Slight

Reactivity Hazard: None

Hazard And Precautions: ACUTE: INHALATION: MAY IRRITATE RESPIRATORY TRACT WITH
 COUGHING, SHORTNESS OF BREATH, SORE THROAT & RUNNY NOSE. SKIN: MAY CAUSE
 IRRITATION, REDNESS, SWELLING ITCHING & PAIN. EYE CONTACT: MAY CAUSE IRR
 ITATION, REDNESS, SWELLING, ITCHING, TEARING & PAIN. INGESTION: MAY CAUSE
 GASTROENTERITIS (INFLAMMATION OF THE LINING MEMBRANE OF THE STOMACH AND
 INTESTINES) W/ABDOMINAL PAIN, NAUSEA, VOMITING & DIARRHEA. SYSTEMIC
 EFFECTS MAY FOLLOW AND MAY INCLUDE RINGING OF EARS, DIZZINESS, ELEVATED BLOOD
 PRESSURE, BLURRED VISION & TREMORS. CHRONIC: CANCER HAZARD. CONTAINS
 PHTHALIC ACID, BIS(2-ETHYLHEXYL) ESTER WHICH IS LISTED AS A HUMAN LUNG
 CARCINOGEN (FP N).

=====
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 Manufacturer's CAGE: 1P573



Material Safety Data Sheet

SPI #02463-MB Formvar® Resin for Electron Microscopy

Section 1: Identification

Date Effective..... May 13, 2004
 (most recent revision)

Chemical Name/Synonyms... Polyvinyl formal

Chemical family..... Polyvinyl formal

Emergencies
 Contacting CHEMTREC:

24 Hour Emergency Use Only #'s.....
 Worldwide phone: 1-(703)-527-3887
 Worldwide FAX: 1-(703)-741-6090
 Toll-free phone: 1-(800)-424-9300 USA only

Product or Trade Name.... **SPI #02463-MB Formvar®**
 Resin for Electron Microscopy

CAS #.....	63450-15-7	99.9+%	polyvinyl formal
	50-00-0	< 0.1	formaldehyde

Chemical Formula..... Not known



Section 2 Composition

CAS #.....	63450-15-7	99.9+%	polyvinyl formal
	50-00-0	< 0.1	formaldehyde

NFPA Rating: Not known

Section 3: Hazard Identification

Emergency overview:

This material is not hazardous by OSHA Hazard Communication Definition

Physical Health Hazards:

None known.

Physical state: Solid

Color: White to straw colored, free flowing powder

Odor: Slightly pungent

Odor threshold: No data available

Potential Health Effects:

Routes of exposure

Eye, ingestion, skin contact

Signs and Symptoms of Acute Exposure:

Not known. Animals subjected to long term exposure to polyvinyl alcohol under the skin showed no increase in tumor formation where a powdered form was used. However, an increase in tumors was reported in similar studies where polyvinyl alcohol sponges were implanted (IARC Monographs 19:351-359). NIOSH registry of toxic effects of chemical substances reported polyvinyl alcohol as "animal positive" for carcinogenicity. Although the sponge form of polyvinyl alcohol has caused fibrosis in humans, the information is not considered relevant to normal workplace exposure to polyvinyl alcohol resins and therefore, these resins are not considered to pose a carcinogenic risk to a worker.

Skin contact:

Dermal contact is expected to be the primary route of occupational exposure to Formvar/Vinylac. Occupational exposure to this material has not been reported to cause significant adverse health effects. On the basis of available information, exposure to Formvar resin is not expected to produce significant adverse human health effects when recommended protection measures are followed.

Inhalation:

If use of the material results in a "dust" being formed, then such dust should be contained and inhalation minimized. One way to help contain such free-flying dust would be to "wet" the dry dust. If exposure is excessive or chronic, then use NIOSH/MSHA approved respiratory protection equipment.

Eye contact:

Mechanical irritation is possible, therefore the dust form of the

material should be kept from contacting the eyes.

Ingestion:

Ingestion is unlikely.

Chronic Health Effects Summary:

No known chronic health effects.

Conditions Aggravated by Exposure:

No known conditions are aggravated by this material. However, there is a dust-explosion potential present with the use of this material, especially when working with larger (than laboratory) quantities.

Section 4: First Aid Measures

Take proper precautions to ensure your own health and safety before attempting to rescue and providing first aid. These practices include avoiding all unnecessary exposure and removal of the material from eye, skin, and clothing. For specific information refer to the Emergency Overview in Section of this MSDS.

Inhalation:

If symptoms are experienced, move victim to fresh air, if symptoms persist, obtain medical attention.

Eye Contact:

Wash eyes with clean low-pressure water. If irritation persists, seek medical advice.

Skin Contact:

If powdered or dust form of the material contacts the skin, immediately flush the skin with large amounts of water. If irritation or other symptoms persist, seek medical attention.

Ingestion:

Adverse health effects due to ingestion are not anticipated. If gastric irritation or discomfort persists, seek medical advice.

Section 5: Fire Fighting Measures

NFPA Rating: Not known

Flammability classification: Not classified.

Flash Point/Method: Not applicable

Auto-Ignition Temperature: Not known

Flammable Limits:

Lower: Not applicable
Upper: Not applicable

Hazardous Combustion/Decomposition Products:

Carbon monoxide, carbon dioxide, formaldehyde, acetic acid, acrolein (trace) may be formed.

Special Conditions to Avoid:

Dust particles in the atmosphere of this material may be explosive. Keep away from heat, sparks, flame and all other ignition sources. Keep containers or bags tightly closed. Clean up all dust accumulations. Prevent dust accumulations and dust clouds, possibly using water to "wet" dry dust from forming a cloud.

Note: Processes using spray application or fluidized bed operation should be in accordance with NFPA 33 "Standard for Spray Applications Using Flammable and Combustible Materials."

Extinguishing Media:

Water spray or any Class A extinguishing agent.

Fire Fighting Instructions:

Protective Equipment/Clothing: Wear a NIOSH approved positive pressure self-contained breathing apparatus and firefighter turnout gear. There could be the evolution of toxic products of combustion. Firefighting equipment should be fully decontaminated after use.

Instructions:

Use flooding quantities of water until well after fire is out.

Unusual fire and explosion hazards:

Dust when mixed in sufficient quantities with air creates a potential for explosive concentrations.

Section 6: Accidental Release Measures

Release response:

Vacuum or otherwise pick up and retain for recycle or disposal. Do not flush spilled material to the sewer or the environment. Avoid creating a dust cloud since this could create an a potential for a dust explosion hazard. Use vacuum equipment designed especially for handling combustible dust.

Reportable Quantities:

See Section 15: Regulatory information.

Section 7: Handling and Storage

Handling:

The handling of powder in both loading and unloading operations as well as fabrication may cause dust to be formed, and necessary precautions for personal protection (see Section 8) should be used. As with all finely divided materials, precautions should be taken to avoid inhalation and eye contact. Transfer from storage with a minimum amount of dusting. Ground all transfer, blending, and dust collecting equipment to prevent static sparks in accordance with NFPA 70 "National Electric Code." ~~Remove all ignition sources from material handling, transfer, and processing areas where dust may be present.~~ Local exhaust ventilation should be provided in work areas. Ensure that airborne dust concentrations are controlled within acceptable OSHA dust standards. If material is used in spray or fluidized bed operations, see Section 5 of this MSDS for additional information.

Of course for the normal electron microscopy application, minute quantities are being used and the real hazard is not from the resin but from the chloroform solvent.

Storage:

Keep container dry. Store away from excessive heat, sparks and flame. Avoid creating any dust cloud when handling. Keep container closed to prevent contamination.

Section 8: Exposure Controls and Personal Protection

Engineering Controls:

If user operations generate dust or fumes, ventilate area to prevent accumulation.

Personal Protection:

Inhalation: Use appropriate respiratory protection where atmosphere exceeds recommended limits.

Skin: Protective clothing such as long sleeves or a lab coat should be worn. When handling heated materials, also be sure to use heat-resistant gloves, boots and face protection. Such precautions are of course not necessary for the use of small quantities such as in an electron microscope laboratory.

Eye: Always use safety glasses, even for work with small quantities, such as the making Formvar filmed grids.

Section 9: Physical and Chemical Properties

Boiling Point/Range: Not applicable
pH: Not applicable
Vapor Pressure: Not applicable
Viscosity: Not applicable

Specific Gravity (Water = 1): 1.23

Water solubility: Insoluble

Solubilities: Chloroform, ethylene dichloride, phenols, some chlorinated hydrocarbons, alcohol mixtures, and certain aromatic hydrocarbons.

Octanol/Water Partition Coefficient in Kow: Specific value not known

Melting/Freezing Point: Not applicable, resin not crystalline

Evaporation Rate: Not applicable

Section 10: Stability and Reactivity

Chemical Stability:

The product is stable and does not under go a hazardous polymerization.

Conditions to Avoid:

Avoid contact with excessive heat, sparks or open flame or dust accumulation.

Incompatibility with:

None known

Hazardous Products of Deposition:

Carbon dioxide, carbon monoxide, formaldehyde, acotic acid, acrolein (trace).

Reactions with Air and Water:

Does not react with air, water or other common materials.

Section 11: Toxicological Information

Summary:

Not considered to be toxic to humans or animals

Component:

Polyvinyl formal 99.9+%
Formaldehyde < 0.1%

Skin Effects:

No skin effects are expected from Formvar contact.

Acute Oral Effects:

Animal studies showed no adverse health effects when performed on polyvinyl alcohol.

Acute Inhalation Effects:

None known

Subchronic Effects:

None known

Chronic Effects/Carcinogenicity:

None expected from Formvar however, formaldehyde is a suspected human carcinogen by IARC. Note: Formaldehyde is present but in less than 0.1% levels.

Reproductive/Development Effects:

No reproductive or developmental effects are expected.

Section 12: Ecological Information

Exotoxicity: Exotoxicity is expected to be low based on the low water solubility of polymers. No other information is known on this topic.

Environmental Fate: No information found in our selected references.

Bioaccumulation: Not expected to occur.

Section 13: Disposal Considerations

Formvar/Vinylac is not a "hazardous waste" as that term is defined in the Resource Conservation and Recovery Act (RCRA), 40 DFR 261, "Identification and Listing of Hazardous Waste". Burn in an approved incinerator or dispose of in an approved landfill in accordance with all applicable local, state, and federal laws and regulations. Consult your appropriate regulatory

officials for information on such disposal.

Section 14: Transport Information

Proper Shipping Name: Formvar Resin

Special Hazard Precautions: Causes only slight eye irritation.

DOT Hazard Class: Non-Regulated

UN/NA ID: Not Regulated

Packing Group: Not Applicable

Labels: Not Regulated

Marine Pollutant: Not known, but probably not based on its insolubility in water.

NAER Guidebook: Not Regulated

DOT Status: Not Regulated

Section 15: Regulatory Information

TSCA: This product is listed on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification Rule, they will be listed below.

TSCA 12(b) Component Listed under TSCA Section

SARA-Section 313 Emissions Reporting:
Component Reporting Threshold

SARA-Section 311/312:
No components present in this product are subject to the reporting requirements of this statute.

CERCLA Hazardous Substances and their Reportable Quantities:

Component	Reportable Quantity
-----------	---------------------

California Prop. 65:
Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State has found to cause cancer, birth defects or other reproductive harm. If this product contains an ingredient listed by the State of California to cause cancer

or reproductive toxicity, it will be listed below:

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

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Tuesday October 25, 2005

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Directions for Use

Mixing

By volume: Mix 1 pound of Ultra-CAT™ with 6 to 7 ounces of water and mix thoroughly. Then add another 2 to 3 ounces and mix again. Continue mixing until material is lump free (3-5 minutes)

One pound of dry mix makes approx 1.5 quarts of glue.

By weight: Mix 100 parts by weight of Ultra-CAT™ with 50-65 parts by weight of water. Continue mixing until mix is lump free (3-5 minutes)

***Tip from Joe:** The open time is critical! The open time allows some of the moisture to be absorbed by the adhesive. Don't rush to get the adhesive on to the substrate. If the glue seems too thin, do not adjust the mixing ratio below 50 parts of water. Just give the adhesive an extra minute to fully absorb the water and re-stir.

Spreading

Apply enough to provide a thin uniform bead of squeeze-out when under pressure. A dedicated glue roller or 1/8" V notched spreader is the ideal application tool. Allow 15 minutes of open time before pressing.

Timing and Conditions

Open time: 20 to 30 minutes

Assembly time: 40 minutes

Pressing time: cold vacuum press - 4 to 6 hours @ 70°F

Pressing time: heated vacuum press - 2 to 4 hours @ 90°F

Pot Life: 4 hours when mixed

Dry shelf life: 12 months

Allow 24 hours to cure before machining.

Storage

Keep from freezing. Because Ultra-CAT™ is extremely hygroscopic, it should be stored in a tightly closed container in cool, dry place at all times.

Clean Up

Clean up with warm water while glue is wet.

MSDS (Material Safety Data Sheet)

Product name: Powdered Plastic Resin

Read and understand this before using or handling product.

Custom-Pak Adhesives 11047 Lambs Lane Newark, OH. 43055

Emergency phone#: (740) 763-2886

Chemical description: LJP Resin Powder

General product use: General-purpose wood adhesive

CHEMICAL HAZARD RATING

Health=1 (moderate) Fire=8 (least) Reactivity=0 (least)

Section One- Hazardous Ingredients

Chemical Name: ~~Formaldehyde~~

CAS Number: ~~50-00-0~~

- o ACGIH TLV: .3 ppm (.37 mg/m3) ceiling
- o OSHA PEL: .75 ppm (.9 mg/m3) TWA; 2 ppm (2.5mg/m3) 15 min STEL
- o NIOSH Document Number 77-126

Potential Cancer Hazard

Rats chronically exposed to 14-ppm formaldehyde contracted nasal cancers. Based on animal data and limited epidemiological evidence, NTP and IARC have listed formaldehyde as a probable human carcinogen. OSHA regulates formaldehyde as a potential human carcinogen.

May cause allergic skin reaction. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and that pre-existing respiratory and skin disorders may be aggravated by exposure.

OSHA has identified 0.5 ppm as the "Action Level"
29CFR 1910.1048. Please refer to the OSHA standard for guidance applicable to your specific operations.

Wood Flour

OSHA 1989 PEL remanded, but in effect in some states

May cause allergic skin reaction. May cause allergic respiratory reaction.

ACGIH TLV: TWA 5 mg/m3; STEL 10 mg/m3 (softwood)

OSHA PEL: TWA 15 mg/m3 (total dust); 5 mg/m3 (respirable)

Remanded PEL TWA 5mg/m3 TWA; 10mg/m3 STEL (all soft and hardwoods)

Other: ACGIH TLV: TWA 1 mg/m3 (certain hardwoods)

Section Two-Physical Data

- o Appearance and odor: Tan dry powder with little or no odor
- o Storage life: 1-1/2 years @ 70F
- o Boiling Point: 100C(212F)
- o Flash Point: not applicable
- o Auto-ignition Temperature: Not applicable
- o Lower Explosion limit: Not applicable
- o Upper Explosion Limit: Not applicable
- o Free Formaldehyde Content <0.7
- o 49CFR 173.140 Class 9 RQ Formaldehyde

Section Three-Immediate Health Hazards

- o Skin absorption: No hazards known.
- o Ingestion: May be harmful if swallowed.
- o Inhalation: Not expected to be harmful under normal conditions of use. However, if allowed to become airborne, may cause irritation of nose, throat and lungs.
- o Skin: May cause irritation on prolonged or repeated contact.
- o Eyes: May cause irritation on prolonged or repeated contact.

Section Four-Emergency and First Aid procedures

- o Ingestion: If accidentally swallowed dilute by drinking large quantities of water. Immediately contact poison control center or hospital emergency room for any other additional treatment directions.
- o Inhalation: Remove to fresh air.
- o Skin Contact: In case of irritation, flush with water.
- o Eye Contact: Immediately flush eyes with plenty of water. Call a physician if irritation persists.

Section Five-Fire and Explosion Hazards

Will burn. Refer to NFPA Pamphlet No. 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastic Industries," if this material is to be reduced to or collected as a powder. In case of fire, use water spray, dry chemical, "alcohol" foam or CO2. Use water to keep fire-exposed containers cool.

Section Six-Safe Handling and Personal Protection

Personal Protection

Where air contaminants can exceed acceptable criteria, use NIOSH/MSHA approved respiratory protection equipment. Respirators should be selected based on the form and concentration of contaminants in air in accordance with OSHA 29 CFR 1910.134 or other applicable standards or guidelines.

If airborne contaminants are generated when the material is heated or handled, sufficient ventilation in volume and airflow patterns should be provided to keep air contaminant concentration levels below acceptable criteria.

Safe Handling

Inhalation: Avoid prolonged or repeated breathing of vapor.

Skin: Avoid prolonged or repeated contact with skin.

Eyes: Avoid prolonged or repeated contact with eyes.

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and clothing. Wash thoroughly after handling.

Section Seven-Spill or Leak and Disposal Procedures**Spill or Leak**

o Large quantities: Enclose with diking material to prevent seepage into natural bodies of water and then consult Custom-Pak Adhesives.

Small Quantities

o Soak up with absorbent material and remove to chemical disposal area.

Disposal

o Recover free liquid. Absorb residue and dispose of according to local, state/provincial, and federal requirements.

Section Eight-Storage

o Keep from freezing.

o Do not store near strong oxidizing chemicals.

o Store in a tightly closed container.

Section Nine-Transportation

Refer to bill of lading for proper DOT description.

Section Ten-Reactivity Data

Normally stable as defined in NFPA 704-12(4-3.1).

In common with most organic materials, this product should be treated as a combustible dust in the finely divided and suspended state.

Hazardous polymerization will not occur.

Decomposition products may include:

CO, CO₂, aldehydes (including formaldehyde), hydrogen cyanide, particular matter and other organic compounds.

Section Eleven-Regulatory and other information

The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that the information contained on these sheets be made available to your workers. Instruct your workers to handle this product properly.

SARA TITLE III SECTION 313**AND 40 CFR PART 372****TOXIC CHEMICAL NOTIFICATION SHEET****Powdered Plastic Resin**

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

CAS Registry Number: 50-00-0

Chemical Name: Formaldehyde

Percent by Weight: 0.64

This Toxic Chemical Notification Sheet must not be detached from the MSDS. Any copying and redistribution of the MSDS shall include copying and redistribution of this notification sheet attached to copies of the MSDS subsequently redistributed.

FACTOR II INC COR OF FOREST AND SUTTER -- NATURAL/DYED RAYON FLOCKING --
6850-00F051884

===== Product Identification =====

Product ID: ~~NATURAL/DYED RAYON FLOCKING~~

MSDS Date: ~~06/01/1991~~

FSC: 6850

NIIN: 00F051884

MSDS Number: CCFXM

=== Responsible Party ===

Company Name: ~~FACTOR II INC COR OF FOREST AND SUTTER~~

~~Box: 1339~~

City: ~~LAKESIDE~~

State: ~~AZ~~

ZIP: ~~85929-5000~~

Country: US

Info Phone Num: ~~520-537-8387~~

Emergency Phone Num: 520-537-8387

CAGE: 9X013

=== Contractor Identification ===

Company Name: FACTOR II INC COR OF FOREST AND SUTTER

Box: 1339

City: LAKESIDE

State: AZ

ZIP: 85929-5000

Country: US

Phone: 520-537-8387

CAGE: 9X013

===== Composition/Information on Ingredients =====

Ingred Name: NON-HAZARDOUS INGREDIENTS

===== Hazards Identification =====

Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Explanation of Carcinogenicity:NONE

===== First Aid Measures =====

First Aid: OBTAIN MEDICAL ATTENTION IN ALL CASES.

===== Fire Fighting Measures =====

Extinguishing Media: WATER

Fire Fighting Procedures: NONE

Unusual Fire/Explosion Hazard: NONE

===== Handling and Storage =====

Handling and Storage Precautions: NONE

Other Precautions: NONE

===== Exposure Controls/Personal Protection =====

Respiratory Protection: COMMERCIAL THROW-AWAY MASK IF HIGH CONCENTRATION
IN AIR.

Other Protective Equipment:NONE
Supplemental Safety and Health

===== Physical/Chemical Properties =====

Solubility in Water:INSOLUBLE
Appearance and Odor:SHORT FIBER-NATURAL/WHITE/COLORS W/NO ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
Stability Condition to Avoid:NONE
Hazardous Decomposition Products:NONE

===== Disposal Considerations =====

Waste Disposal Methods:DUMP IAW/FEDERAL, STATE & LOCAL REGULATIONS.

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document should seek competent professional advice to verify and
assume responsibility for the suitability of this information to their
particular situation.

Material Safety Data Sheet

Benzethonium chloride

ACC# 68945

Section 1 - Chemical Product and Company Identification

MSDS Name: Benzethonium chloride**Catalog Numbers:** AC105380000, AC105380050, AC105381000, AC105385000**Synonyms:** (Diisobutylphenoxyethoxyethyl)dimethylbenzylammonium chloride; Hyamine 1622.**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01**For emergencies in the US, call CHEMTREC:** 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
2154-0	Benzethonium chloride	97	204-479-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white powder.

Warning! Harmful if swallowed. May cause eye irritation and possible burns. May cause respiratory and digestive tract irritation. May cause skin irritation. Hygroscopic (absorbs moisture from the air).

Target Organs: Blood, kidneys, lungs, respiratory system, skin, bladder.

Potential Health Effects**Eye:** May cause eye irritation and possible burns.**Skin:** May cause skin irritation.

Ingestion: Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Human fatalities have been reported from acute poisoning.

Inhalation: May cause respiratory tract irritation.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately.

Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Extinguishing Media: Use agent most appropriate to extinguish fire. Do NOT get water inside containers. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: N/A

Upper: N/A

NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation. Do not get water inside containers.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Keep from contact with moist air and steam.

Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzethonium chloride	none listed	none listed	none listed

OSHA Vacated PELs: Benzethonium chloride: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: white

Odor: None reported.

pH: 4.8 @ 1% solution

Vapor Pressure: Not available.

Vapor Density: 15.4

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: 158 - 163 deg C

Decomposition Temperature: Not available.

Solubility: Soluble.

Specific Gravity/Density: Not available.

Molecular Formula: C₂₇H₄₂ClNO₂

Molecular Weight: 448.08

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Dust generation, moisture, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 121-54-0: B07175000

LD50/LC50:

CAS# 121-54-0:

Draize test, rabbit, eye: 30 ug Severe;

Oral, mouse: LD50 = 338 mg/kg;

Oral, rat: LD50 = 368 mg/kg;

Carcinogenicity:

CAS# 121-54-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.**Teratogenicity:** No information available.**Reproductive Effects:** No information available.**Mutagenicity:** No information available.**Neurotoxicity:** No information available.**Other Studies:**

Section 12 - Ecological Information
--

Ecotoxicity: No data available. No information available.**Environmental:** Will not biodegrade.**Physical:** No information available.**Other:** No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.**RCRA U-Series:** None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information
--

US FEDERAL**TSCA**

CAS# 121-54-0 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 121-54-0 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 22 Harmful if swallowed.

R 36 Irritating to eyes.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

WGK (Water Danger/Protection)

CAS# 121-54-0: No information available.

Canada - DSL/NDSL

CAS# 121-54-0 is listed on Canada's DSL List.

Canada - WHMIS

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 9/15/1998

Revision #3 Date: 8/21/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

POLYSCIENCE -- DIELDRIN, 510C-12 -- 6810-00N047403

===== Product Identification =====

Product ID: DIELDRIN, 510C-12
 MSDS Date: 03/01/1992
 FSC: 6810
 NIIN: 00N047403
 MSDS Number: BTYBT
 === Responsible Party ===
 Company Name: POLYSCIENCE
 Address: 7800 MERRIMAC AVE
 City: NILES
 State: IL
 ZIP: 60648
 Country: US
 Info Phone Num: 708-965-0611
 Emergency Phone Num: 321-965-0611
 CAGE: IO526

=== Contractor Identification ===

Company Name: POLYSCIENCE
 Address: 7800 MERRIMAC AVE
 Box: City: NILES
 State: IL
 ZIP: 60714
 Country: US
 Phone: 708-965-0611
 CAGE: IO526
 Company Name: POLYSCIENCE CORP
 Address: 7800 N MERRIMAC AVE
 Box: 48312
 City: NILES
 State: IL
 ZIP: 60714-3426
 Country: US
 Phone: 708-965-0611
 CAGE: 58378

===== Composition/Information on Ingredients =====

Ingred Name: 1,4:5,8-DIMETHANONAPHTHALENE, 1,2,3,4,10,10-
 HEXACHLORO-6,7-EPOXY-1,4,4A,5,6,7,8,8A-OCTAHYDRO, ENDO, EXO-; (ING
 2)

CAS: 60-57-1
 RTECS #: IO1750000
 OSHA PEL: 0.25 MG/M3, S
 ACGIH TLV: 0.25 MG/M3, S
 EPA Rpt Qty: 1 LB
 DOT Rpt Qty: 1 LB

Ingred Name: ING 1: (DIELDRIN (SARA III))
 RTECS #: 9999999ZZ

===== Hazards Identification =====

LD50 LC50 Mixture: LD50: (ORAL, RAT) 38300 UG/KG
 Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES
 Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
 Health Hazards Acute and Chronic: ACUTE: MAY BE FATAL IF INHALED,

SWALLOWED, OR ABSORBED THROUGH SKIN. MAY CAUSE IRRITATION.
 CARCINOGEN. MAY ALTER GENETIC MATERIAL. OVEREXP MAY CAUSE REPROD
 DISORDER(S) BASED ON TESTS W/LAB ANIMALS. TARGET ORGANS: CNS,
 LIVER, BLOOD. OVEREXPCAN CAUSE: MALAISE, HEADACHE, NAUSEA,
 VOMITING, DIZZ, (EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT

Effects of Overexposure:HLTH HAZ: TREMORS, CLONIC AND TONIC
 CONVULSIONS, COMA, RESPIRATORY FAILURE.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:EYE/SKIN: FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15
 MIN WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. INHAL: REMOVE
 TO FRESH AIR. IF NOT BRTHG GIVE ARTF RESP. IF BRTHG IS DIFFICULT,
 GIVE O XYGEN. INGEST: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS
 CONSCIOUS. CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE
 REUSE.

===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR
 APPROPRIATE FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL
 PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

===== Accidental Release Measures =====

Spill Release Procedures:EVACUATE AREA. WEAR NIOSH/MSHA APPROVED SCBA,
 RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN BAG AND
 HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA AND
 WASH SPILL SITE AFTER MAT L PICKUP IS COMPLETE.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:DO NOT BREATHE DUST. DO NOT GET IN
 EYES, ON SKIN, ON CLOTHING. AVOID PRLNGD/RPTD EXPOSURE. READILY
 ABSORBED THROUGH SKIN. HIGHTLY TOXIC. CARCINOGEN.

Other Precautions:MUTAGEN. REPRODUCTIVE HAZARD. KEEP TIGHTLY CLOSED.
 STORE IN A COOL DRY PLACE. MAY CAUSE CANCER. MAY CAUSE HERITABLE
 GENETIC DAMAGE. VERY TOXIC BY INHALATION, IN CONTACT WITH SKIN & IF
 SWALLOWED.IF YOU FEEL UNWELL, SEEK MED ADVICE.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:WEAR APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.

Ventilation:USE ONLY IN A CHEMICAL FUME HOOD.

Protective Gloves:CHEMICAL-RESISTANT GLOVES.

Eye Protection:ANSI APPROVED CHEM WORK GOGG .

Other Protective Equipment:PROTECTIVE CLOTHING. ANSI APPROVED SAFETY
 SHOWER AND EYE BATH .

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health
 NONE SPECIFIED BY MANUFACTURER.

===== Physical/Chemical Properties =====

HCC:T3

Melt/Freeze Pt:M.P/F.P Text:289F,143C

Vapor Density:13.2

Appearance and Odor:ORANGE-TAN POWDER

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:TOXIC FUMES OF: CARBON MONOXIDE,
CARBON DIOXIDE, HYDROGEN CHLORIDE GAS.

===== Disposal Considerations =====

Waste Disposal Methods:DISSOLVE OR MIX THE MATL W/A COMBUSTIBLE SOLVENT
AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AFTERBURNER AND
SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

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assume responsibility for the suitability of this information to their
particular situation.

ROHM AND HAAS CO. -- DITHANE,M-45 FUNGICIDE -- 6840-00-960-7244

===== Product Identification =====

Product ID: DITHANE, M-45 FUNGICIDE

MSDS Date: 01/01/1985

FSC: 6840

NIIN: 00-960-7244

MSDS Number: BFZHB

=== Responsible Party ===

Company Name: ROHM AND HAAS CO.

Emergency Phone Num: 215-592-3000

CAGE: 77902

=== Contractor Identification ===

Company Name: ROHM AND HAAS CO

Address: 100 INDEPENDENCE MALL WEST

Box: City: PHILADELPHIA

State: PA

ZIP: 19106-2399

Country: US

Phone: 215-592-2521/215-592-3000

CAGE: 77902

===== Composition/Information on Ingredients =====

Ingred Name: MANEB (SARA III)

CAS: 12427-38-2

RTECS #: OP0700000

Ingred Name: ZINC, (ETHYLENEBIS(DITHIOCARBAMATE)) (SEE SUPP DATA)

RTECS #: ZH3325900

Ingred Name: ETHYLENE THIOUREA (SARA III)

CAS: 96-45-7

RTECS #: NI9625000

Fraction by Wt: 0.1%

EPA Rpt Qty: 10 LBS

DOT Rpt Qty: 10 LBS

Ingred Name: INERT INGREDIENTS

Fraction by Wt: 19%

===== Hazards Identification =====

Effects of Overexposure: EYE CONT: INFLAM OF RETINA. SKIN: IRRIT.

INHALATION: CAN CAUSE PROGRESSIVE POISONING.

===== First Aid Measures =====

First Aid: INHAL: MOVE TO FRESH AIR. EYE CONT: FLUSH WITH WATER 15 MIN.

CONSULT A DR. SKIN: WASH AREA WITH SOAP & WATER. INGESTION: INDUCE

VOMITING IMMEDIATELY. CALL A DR.

===== Fire Fighting Measures =====

Flash Point: 280F/137C (TOC)

Extinguishing Media: CO2, DRY CHEMICAL, WATER FOG

Fire Fighting Procedures: SELF-CNTND BRTHG APP, WATER SPRAY TO COOL CONTAINERS.

Unusual Fire/Explosion Hazard: TOXIC AND FLAMMABLE GASES ARE EVOLVED
WHEN MATERIAL IS HEATED ABOVE 176F/80C.

===== Accidental Release Measures =====

Spill Release Procedures: SWEEP OR SHOVEL INTO CONTAINERS FOR DISPOSAL
OR REWORK. KEEP DUSTING TO A MINIMUM. FLUSH CONTAMINATED AREA WITH A
LARGE AMOUNT OF WATER TO A CHEMICAL OR SANITARY SEWER, CONTAINING A
SETTLING PIT. KEEP SO LIDS OUT OF MUNICIPAL SEWER OR OPEN BODIES
WATER

===== Handling and Storage =====

Handling and Storage Precautions: STORE AT TEMPS BELOW 100F. KEEP AWAY
FROM FIRES, SPARKS & HOT SURFACES. STORE INSIDE A
COOL, DRY, WELL-VENTED AREA. KEEP CONT CLOSED WHEN NOT IN USE.
Other Precautions: WORKERS SHOULD TAKE A SHOWER AT THE END OF EACH
SHIFT.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: NIOSH/MSHA APPROVED RESP DEVICE IN ACCORD WITH
EXPOSURE OF CONCERN
Ventilation: MECHANICAL LOCAL EXHAUST
Protective Gloves: IMPERVIOUS
Eye Protection: SAFETY GLASSES
Other Protective Equipment: EYEWASH FACILITY, EMERGENCY SHOWER, CLEAN
OUTER CLOTH DAILY.
Supplemental Safety and Health
MAGANESE & ZINC COMPLEX-EBDC, A COORDINATION PRODUCT, COMPRISE 80% OF
PRODUCT BY WEIGHT.

===== Physical/Chemical Properties =====

HCC: N1
Solubility in Water: NEGLIGIBLE
Appearance and Odor: GRAY-YELLOW POWDER; SLIGHT SULFUR ODOR.
Percent Volatiles by Volume: <3

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
OXIDIZING MATERIALS, ACID.
Stability Condition to Avoid: KEEP DRY, AVOID EXCESS HEAT AND IGNITION.
SOURCES

Hazardous Decomposition Products: OXIDES OF
CARBON, NITROGEN, SULFUR, HYDROGEN SULFIDE, CARB DISUF

===== Disposal Considerations =====

Waste Disposal Methods: IF PRACTICAL, LARGE AMOUNTS SHOULD BE RECOVERED
FOR USE, OTHERWISE DISPOSE OF IN A SECURE LANDFILL. SMALL AMOUNTS MAY
BE LANDFILLED ACCORDING TO LOCAL, STATE & FEDERAL REGS. RINSE EMPTY
CONTAINERS WITH WATER DIRECT WASH TO A SANITARY OR CHEM SEWER.

Disclaimer (provided with this information by the compiling agencies):
This information is formulated for use by elements of the Department
of Defense. The United States of America in no manner whatsoever,
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OCTAGON PROCESS INC -- SEVIN -- 6840-00-932-7297

===== Product Identification =====

Product ID: SEVIN
 MSDS Date: 01/01/1987
 FSC: 6840
 NIIN: 00-932-7297
 MSDS Number: BFXGY
 === Responsible Party ===
 Company Name: OCTAGON PROCESS INC
 Address: 596 RIVER ROAD
 City: EDGEWATER
 State: NJ
 ZIP: 07020-1105
 Country: US
 Info Phone Num: 201-945-9400
 Emergency Phone Num: 201-945-9400
 CAGE: 82925

=== Contractor Identification ===

Company Name: OCTAGON PROCESS INC.
 Address: 596 RIVER ROAD
 Box: City: EDGEWATER
 State: NJ
 ZIP: 07020
 Country: US
 Phone: 201-945-9400
 CAGE: 82925

===== Composition/Information on Ingredients =====

Ingred Name: CARBARYL (SEVIN) (SARA III)
 CAS: 63-25-2
 RTECS #: FC5950000
 Fraction by Wt: 80%.
 OSHA PEL: 5 MG/M3
 ACGIH TLV: 5 MG/M3; 9192
 EPA Rpt Qty: 100 LBS
 DOT Rpt Qty: 100 LBS

Ingred Name: INERT INGREDIENTS (TYPE NOT SPECIFIED)
 Fraction by Wt: 20%.

===== First Aid Measures =====

First Aid: CARBARYL IS A MODERATE, REVERSIBLE, CHOLINESTERASE INHIBITOR.
 ATROPINE IS ANTIDOTAL

===== Fire Fighting Measures =====

Flash Point: NONE
 Extinguishing Media: EXTINGUISH WITH AGENT SUITABLE FOR SURROUNDING FIRE
 Fire Fighting Procedures: EVAC. AREA. WEAR SCBA, GET MED. ATTN. FOR
 SMOKE EXPOSED
 Unusual Fire/Explosion Hazard: DECOMP. PRODUCTS MAY BE HAZARDOUS.

===== Accidental Release Measures =====

Spill Release Procedures: WASH AREA WITH COPIOUS AMOUNTS OF WATER

=====
Handling and Storage

Handling and Storage Precautions: AVOID CONTAMINATION OF FOOD, FEED, WATER SUPPLIES, STREAMS & PONDS. AVOID PROLONGED OR REPEATED BREATHING OF DUST OR SPRAY. DO NOT TAKE INTERNALLY.

Other Precautions: WEAR LONG-SLEEVED WORK CLOTHING. CHANGE TO CLEAN CLOTHING DAILY. WASH THOROUGHLY AFTER HANDLING.

=====
Exposure Controls/Personal Protection

Respiratory Protection: USE NIOSH/MSHA APPRV. RESPIRATORY FOR PESTICIDE DUST.

Ventilation: MECHANICAL (GENERAL) ACCEPTABLE LOCAL EXHAUST IF NEEDED.

Protective Gloves: IMPERVIOUS

Eye Protection: SAFETY/CHEM GOGGLES

Other Protective Equipment: AS REQUIRED TO PREVENT PROLONGED CONTACT.

Supplemental Safety and Health

CHEMICAL NAME: 1-NAPHTHYL METHYL CARBAMATE

=====
Physical/Chemical Properties

HCC: T5

Solubility in Water: APPRECIABLE

Appearance and Odor: FREE FLOWING POWDER, WHITE, CREAM, OR LIGHT GRAY

=====
Stability and Reactivity Data

Stability Indicator/Materials to Avoid: YES

ALKALIS, STRONG ACIDS

Stability Condition to Avoid: EXTENDED STORAGE @ TEMP > 100F.

Hazardous Decomposition Products: OXIDE OF NITROGEN, C & SULFUR

Conditions to Avoid Polymerization: WILL NOT POLYMERIZE

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MATERIAL SAFETY DATA SHEET

CYNOFF WP INSECTICIDE



Cynoff WP-1 Lb.

Free Shipping !

Cynoff WP-More Information



MSDS Ref. No: 52315-07-8-3

Version: Global

Date Approved: 08/13/1998

Revision No: 9

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: CYNOFF® WP INSECTICIDE

PRODUCT CODE: 1070

ACTIVE INGREDIENT: Cypermethrin

CHEMICAL FAMILY: Pyrethroid Pesticide

MOLECULAR FORMULA: C₂₂H₁₉Cl₂NO₃ (cypermethrin)

SYNONYMS: FMC 30980; ()-a-cyano(3-phenoxyphenyl)methyl () cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate; IUPAC: (RS)-a-cyano-3-phenoxybenzyl (1RS)-cis-trans-3-(2,2-dichlorovinyl)-1,1-dimethylcyclopropanecarboxylate

MANUFACTURER

FMC CORPORATION

Emergency Telephone Numbers:

Agricultural Products Group
 1735 Market Street
 Philadelphia, PA 19103 USA
 General Information: 800-321-1362

Emergency Phone (FMC) 800-331-3148
 (U.S.A. & Canada)
Emergency Phone (FMC) 716-735-3765
 (Reverse Charges)
CHEMTREC (800) 424-9300 (U.S.A. &
 Canada)
 (202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Cypermethrin	52315-07-8	40	None	None	None
Surfactant Blend	0000-00-0	<4.5	None	None	None
Silica, quartz	14808-60-7	<0.5	0.1 mg/m ³ (resp dust)	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

- IMMEDIATE CONCERNS:** - Light tan powder with a faint odor.
- Slightly combustible. May support combustion at elevated temperatures.
 - Thermal decomposition and burning may form toxic by-products.
 - For large exposures or fire, wear personal protective equipment.
 - Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either inhaling or coming into contact with the skin. Symptoms of overexposure include nasal discharge, convulsions and incoordination. Contact with this product may produce skin sensations such as numbing, burning or tingling. These skin sensations are reversible and usually subside within 12 hours.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

4. FIRST AID MEASURES

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

SKIN: Wash with plenty of soap and water.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger or by giving syrup of ipecac. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: This product has low oral and dermal toxicity. It is expected to have low inhalation toxicity. It is minimally irritating to the eyes, and non-irritating to the skin. Do not administer milk, cream or other substances which contain vegetable or animal fats, as they enhance absorption. Central nervous system stimulation should be controlled with sedation by, e.g., barbiturates. Reversible skin sensations (paresthesia) may occur and ordinary skin salves have been found useful in reducing discomfort. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

EXPLOSION HAZARDS: Slightly combustible. This material may support combustion at elevated temperatures.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

HAZARDOUS DECOMPOSITION PRODUCTS: Heat and fire may result in thermal decomposition and the release of carbon monoxide, carbon dioxide, hydrogen cyanide, chlorine and hydrogen chloride.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Large spills should be covered

to prevent dispersal. ~~For dry material, use a wet sweeping compound or water to prevent the formation of dust.~~ If water is used, prevent runoff or dispersion of excess liquid by diking and absorbing with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump all waste material, including absorbent, into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a suitable solution of caustic or soda ash, and an appropriate alcohol (i.e., methanol, ethanol or isopropanol). Follow this by washing with a strong soap and water solution. Absorb, as above, any excessive liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed waste according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: ~~Use local exhaust at all process locations where dust may be emitted.~~ Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For dust exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For dust exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). Respirator use and selection must be based on airborne concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

GLOVES:

Wear chemical protective gloves made of materials such as rubber, neoprene or nitrile. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

COMMENTS: Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Faint

APPEARANCE: Light-tan powder

pH: 8.7 @ 20°C (5% in water)

SOLUBILITY IN WATER: Disperses

DENSITY: (Bulk) 0.28 - 0.38 g/mL (18 - 24 lb/cu ft)

MOLECULAR WEIGHT: 416.3 (cypermethrin)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

DERMAL LD₅₀: >2000 mg/kg (rabbit)

ORAL LD₅₀: 2342 mg/kg (rat)

INHALATION LC₅₀: 2.5 mg/L/4 hr (rat) (cypermethrin)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has low oral and

dermal toxicity. It is expected to have low inhalation toxicity. It is minimally irritating to the eyes, and non-irritating to the skin. Signs of toxicity in laboratory animals included convulsions, ataxia, abdominogenital staining and, oral and ocular discharges. Experience to date indicates that contact with this product may produce skin sensations such as numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, cypermethrin did not cause reproductive toxicity, teratogenicity, neurotoxicity or carcinogenicity in male and female rats and male mice. Cypermethrin caused an increase in benign lung tumors in female mice at 1600 ppm in the diet. The EPA concluded on a weight of evidence approach that cypermethrin represents a low oncogenic potential to female mice at this dose level (approximately 228 mg/kg/day). Liver enlargement is often noted in laboratory animals that have ingested large doses of cypermethrin during their life span. An overall absence of genotoxicity has been demonstrated in tests of mutagenicity, DNA damage and chromosome aberrations. Repeated overexposure to crystalline silica for extended periods has caused acute silicosis. IARC has classified crystalline silica, inhaled in the form of quartz or cristobalite from occupational sources, as carcinogenic to humans (Group 1). NTP has classified respirable crystalline silica (quartz, cristobalite and tridymite) as "reasonably anticipated to be carcinogenic".

CARCINOGENICITY

<u>Chemical Name</u>	<u>NTP Status</u>	<u>IARC Status</u>	<u>OSHA Status</u>	<u>Other</u>
Silica, quartz	Anticipated	Listed	Not listed	(ACGIH) Not Listed

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are for the active ingredient.

ENVIRONMENTAL DATA: When applied at agricultural use rates, cypermethrin has a moderate rate of degradation in the soil. At termiticidal use rates, cypermethrin degrades at a slower rate which is governed by soil characteristics (e.g., pH). The rate of cypermethrin hydrolysis is somewhat faster under alkaline conditions than at neutral or acidic pH. Cypermethrin has a high affinity for organic matter and a Log Pow of 5.0, but has demonstrated a low potential for bioconcentration (BCF = 17). Cypermethrin is not mobile in soil.

ECOTOXICOLOGICAL INFORMATION: Cypermethrin is considered highly toxic to fish and aquatic arthropods, and has LC50 values which range from 0.004 µg/L to 3.6 µg/L. The aquatic arthropods tended to be some of the more sensitive species. Care should be taken to avoid contamination of the aquatic environment. Cypermethrin is slightly toxic to birds and oral LD50 values are greater than 10,248 mg/kg.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location, and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers which held this material should be cleaned, prior to disposal, by triple-rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated.

14. TRANSPORT INFORMATION

U.S. DOT (DEPARTMENT OF TRANSPORTATION)

REPORTABLE QUANTITY (RQ): None

U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, other than Poison. NMFC Item 102120.

MARINE POLLUTANT #1: cypermethrin (Severe Marine Pollutant)

OTHER SHIPPING INFORMATION:

For highway, railroad and air shipment worldwide: Insecticide, NOI.

For water shipment worldwide: Environmentally hazardous substance, solid, n.o.s. (cypermethrin 40%), 9, UN3077, III, MARINE POLLUTANT, ERG Guide 171.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311 HAZARD CATEGORIES (40 CFR 370): Immediate, Delayed

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): The threshold planning quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs.

This product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): There are no ingredients in this product which are subject to Section 313 reporting requirements.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Not listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA REGULATORY (40 CFR 302.4): Not listed

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : WARNING

16. OTHER INFORMATION

Cynoff and FMC Logo - FMC Trademarks

Section(s) Revised : New Format



MATERIAL SAFETY DATA SHEET

Product: **MONCUT[®] 50-W FUNGICIDE**

Formulator: **Gowan Company**
P.O. Box 5569
Yuma, Arizona 85366-5569
(520) 783-8844

Emergency Phone: (520) 783-3803
For 24-Hour Emergency Assistance (Spill, Leak, Fire, or Exposure), Call CHEMTREC[®]:
For **MEDICAL** Emergency:

Inside the U.S.: (800) 424-9300
Outside the U.S.: (703) 527-3887
(800) 225-5635 ext. 283

1. CHEMICAL IDENTIFICATION

Product: **MONCUT 50-W**
EPA Signal Word: Caution
Active Ingredient: Flutolanil (50%)
Chemical Name: N-[3-(1-methylethoxy)phenyl]-2-(trifluoromethyl) benzamide (active ingredient)
Chemical Class: Fungicide
EPA Registration No.: 71711-3-10163
CAS No.: 66332-96-5

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	OSHA – PEL	ACGIH – TLV	OTHER	NTP/IARC/OSHA CARCINOGEN
Flutolanil (50%)	Not established	Not established	Not available	No
Kaolin	Not established	2 mg/m ³ (respirable dust)	Not available	No
Amorphous silica (hydrated)	6 mg/m ³	6mg/m ³	Not available	No

3. HAZARDS IDENTIFICATION

Physical Properties

Appearance: Light tan powder
Odor: No distinct odor

Symptoms of Overexposure

Excessive dust inhalation may irritate the respiratory tract. No other specific health effects are known.

Medical Conditions Likely to be Aggravated by Exposure

Excessive dust inhalation may aggravate pre-existing conditions of the upper respiratory system.

Relevant Routes of Exposure

May be harmful if dust is inhalation or comes in contact with skin. Avoid contact with eyes, skin, or clothing.

Target Organs

Flutolanil (50%): Results from 90-day animal studies suggest no target organ effects under the conditions of normal handling and use.

Hazardous Decomposition Products

Gives off toxic oxides of carbon and nitrogen when burned.

Unusual Fire, Explosion, and Reactivity Hazards

The product powder can be combustible; dispersion of fine dust in the air can form an explosive mixture. Will burn to give off toxic oxides of carbon and nitrogen.

4. FIRST AID MEASURES

If poisoning is suspected, immediately contact a physician, the nearest hospital, or the nearest Poison Control Center. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

Eye Contact: Flush eyes with plenty of water. Call a physician if irritation persists.

Skin Contact: Wash with plenty of soap and water. Call a physician if irritation persists.

Note to Physician

Supportive care is recommended. Treatment based on judgement of the physician.

!! IN ALL CASES OF SUSPECTED POISONING, GET MEDICAL ATTENTION IMMEDIATELY !!

For emergency **MEDICAL** response and hazard communication **ONLY**, call:

Hazard Information Services at (800) 228-5635 ext. 283.

5. FIRE FIGHTING MEASURES

Flashpoint (test method): Not applicable

Flammable Limits (% in air): Not applicable

Autoignition Temperature: Not available

Flammability: Not flammable

Appropriate Extinguishing Media

Use water, foam, carbon dioxide, or dry powder.

Fire Fighting Guidance

Wear positive pressure self-contained breathing apparatus. Spray containers with water to keep cool.

Unusual Fire and Explosion Hazards

The product powder can be combustible; dispersion of fine dust in the air can form an explosive mixture. Will burn to give off toxic oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spills or Leaks

Sweep up carefully while avoiding the formation of a dust cloud. Place in suitable container and seal for disposal. Area can be washed with water to remove last traces of material, but keep out of watercourses or sewers. Inform authorities immediately if contamination occurs. Use proper protective equipment to minimize exposure (see Section 8). Take all necessary action to prevent and to remedy the adverse effect of the spill. Ensure the disposal is in compliance with Federal requirements and State or local regulations.

7. HANDLING AND STORAGE

Precautions in Storing

This product causes moderate eye irritation and is harmful if absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts.

User Safety Recommendations

Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water. Do not use the toilet before thoroughly washing hands. If this product penetrated through your clothing or personal protective equipment, stop handling this product immediately, remove clothing and equipment, wash your body thoroughly, and put on clean clothing and equipment before resuming the handling activity. After handling this product, remove personal protective equipment immediately. Wash the outside of gloves before taking them off. Shower or wash thoroughly and change into clean clothing as soon as possible. Discard clothing and personal protective equipment that cannot be reused, including clothing and other absorbent materials that have been drenched or thoroughly contaminated with this product's concentrate. Otherwise, wash clothing and personal protective equipment (including both the inside and outside of gloves) before each day of reuse according to manufacturer's directions or, if no such directions, in detergent and hot water. Keep and wash them separately from other laundry. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency in your State responsible for pesticide regulation.

7. HANDLING AND STORAGE (Continued)

Storage Precautions

Store in the original container and keep closed. Store in a cool dry place. Do not store near or contaminate food or feed products.

Work/Hygienic Practices

When the product is handled or used in a manufacturing or packaging facility, proper dust exhaustion is required to minimize the potential for dust explosion. However, such electrostatic/dust hazard potential is not applicable to the finished end-use product when it is fully enclosed in a water-soluble bag.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Control airborne concentrations below the exposure guidelines (see Section 2 for OSHA/ACGIH exposure limits). Use with adequate ventilation. Local exhaust ventilation may be necessary, especially when used in a confined area.

For Manufacturing and Packaging Employees

Eye/Face

Protection: Safety glasses; chemical workers goggles.

Skin Protection: PVC protective gloves recommended.

Respiratory

Protection: Ensure good ventilation. If not adequate, use a suitable dust mask or a dust respirator.

Other/General

Protection: None specific; good general practice consistent with pesticide handling.

User Safety

Recommendations: Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Note to Applicators and Handlers of Agricultural Products

For agricultural products which are within the scope of the EPA Worker Protection Standards (WPS) (40 CFR Part 170), all users must refer to the statement below or the Product Label for WPS-specified Personal Protective Equipment (PPE), Restricted Entry Interval (REI), and other Precautionary Statements.

Personal Protective Equipment for Applicators and Handlers

Long sleeved shirts, long pants, waterproof gloves and shoes plus socks must be worn.

Personal Protective Equipment Required for Early Entry Into Treated Areas

For entry into treated area during the restricted entry interval (REI) of 12 hours that involves contact with anything that has been treated such as plants, soil, or water, the PPE required is: coveralls, waterproof gloves, and shoes plus socks

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light tan free-flowing powder
Odor:	Strong mercaptan odor
Melting Point:	219-221°F, 104-105 °C
Boiling Point:	Not applicable
Specific Gravity/ Density:	0.18 g/ml
Solubility in H₂O	
Flutolanil	9.6 mg/L (9.6 ppm) @ 68°F or 20°C
Vapor Pressure	
Flutolanil	1.33 X 10 ⁵ mm Hg @ 68°F or 20°C

10. STABILITY AND REACTIVITY

Stability: Stable at ambient conditions.
Hazardous Polymerization: None
Decomposition Products: Will burn to give off toxic oxides of carbon and nitrogen.
Conditions to Avoid: Extreme heat or moisture

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies

Ingestion: Low toxicity
Oral LD₅₀ (rat): >5,000 mg/kg body weight

Dermal: Low toxicity
Dermal LD₅₀ (rabbit): >2,000 mg/kg body weight

Inhalation: Low toxicity
Inhalation LC₅₀ (rat): >6.72 mg/L – 4 hours
Greater than 6.72 mg/L, the highest attainable dust concentration in air, no mortality or toxicity was observed in 15 days when rats were exposed to this maximum dose.

Eye Contact: Causes moderate eye irritation, especially under conditions of prolonged eye contact.
Skin Contact: Harmful if absorbed through skin.

Mutagenic Potential

Flutolanil (50%): Flutolanil Technical was not mutagenic or genotoxic when tested in the Ames gene mutation assay, the mouse micronucleus test, or the chromosomal aberration assay.

Reproductive Hazard Potential

Flutolanil (50%): Reproductive: Flutolanil Technical showed no adverse effects on reproduction in a three-generation rat reproduction study at dietary doses up to 10,000 ppm.
Teratogenicity: Flutolanil Technical demonstrated no teratogenic effects in rabbits or rats at oral dose levels up to 1,000 mg/kg/day, the highest dose tested in each species.

Chronic Toxicity Studies and Carcinogenic Information

In two-year feeding studies with Flutolanil in rats, no organotoxic effects were observed at dose levels up to 200 ppm. At very high experimental dose levels (2,000-10,000 ppm), slight anemia, minor liver damage, and some nephrosis were observed. However, Flutolanil had no significant effect on mortality and was not carcinogenic at any of the doses tested. Similar results were observed in mice administered up to 30,000 ppm for 18 months and in dogs administered up to 1250 mg/kg/day for two years. EPA Peer Review Committee (1994) classed Flutolanil technical into Group E (noncarcinogenic).

Other Toxicity Information

Neurotoxicity: No chemical neurotoxic signs or other types of neurotoxicity were observed in any toxicology studies.

12. ECOLOGICAL INFORMATION

Summary of Effects

Flutolanil (50%): This product is toxic to shrimp. For terrestrial uses, do not apply directly to water, areas where surface water is present, or to intertidal area below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

13. DISPOSAL CONSIDERATION

Pesticide Disposal

Handling and disposal of pesticide wastes, including spills or rinsates, must be in accordance with Federal requirements under the Resource Conservation and Recovery Act (RCRA). Also must ensure that the waste disposal is in compliance with State and local regulations, which may be more restrictive or otherwise different from the RCRA requirements. Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at approved disposal facilities.

Container Disposal

See product label (e.g., Container Disposal).

14. TRANSPORT INFORMATION

DOT Classification

Not regulated

International Maritime Organization

None

International Civil Aviation Organization

None

15. REGULATORY INFORMATION

SARA Title III Classification

Section 302/304:	Not applicable
Section 311/312:	Acute health hazard
Section 313 chemical(s):	Not applicable

Proposition 65

Not applicable

CERCLA Reportable Quantity (RQ)

Not applicable

RCRA Classification

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

TSCA Status

Exempt from TSCA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health:	1	0	Least
Flammability:	1	1	Slight
Reactivity:	0	2	Moderate
		3	High
		4	Severe

Notice: The information and recommendations contained herein are provided in good faith and are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information herein.

Prepared By:

Gowan Company
(520) 783-8844

Moncut® 50-W Fungicide is a registered trademark of AgrEvo U.S.A. Co.

POST APPLE SCIENTIFIC INC -- SULFUR,POWDER,41498-0 -- 6810-00D007847

===== Product Identification =====

Product ID: SULFUR, POWDER, 41498-0
MSDS Date: 06/01/1994
FSC: 6810
NIIN: 00D007847
MSDS Number: CHVRH
=== Responsible Party ===
Company Name: POST APPLE SCIENTIFIC INC
Address: 8893 GULF RD
City: NORTH EAST
State: PA
ZIP: 16428-4298
Country: US
Info Phone Num: 814-725-3330/FAX: 814-725-8103
Emergency Phone Num: 814-725-3330/800-424-9300 (CHEMTREC)
Preparer's Name: NOT PROVIDED
CAGE: EO236

===== Contractor Identification =====

Company Name: CHEM SCIENTIFIC INC
Address: 1250 WASHINGTON ST
Box: City: NORWOOD
State: MA
ZIP: 02062
Country: US
Phone: 781-440-0900
CAGE: 0X801
Company Name: POST APPLE SCIENTIFIC INC
Address: 8893 GULF ROAD
Box: UNKNOW
City: NORTH EAST
State: PA
ZIP: 16428-4298
Country: US
Phone: 814-725-3330
CAGE: 06JC6
Company Name: POST APPLE SCIENTIFIC INC FORMERLY GORDON POST LAB
Address: 8893 GULF ROAD
Box: City: NORTH EAST
State: PA
ZIP: 16428
Country: US
Phone: 814-725-3330 FAX: 814-725-8103
CAGE: EO236

===== Composition/Information on Ingredients =====

Ingred Name: SULFUR
CAS: 7704-34-9
RTECS #: WS4250000
Fraction by Wt: 99.99%
Other REC Limits: NONE RECOMMENDED

===== Hazards Identification =====

LD50 LC50 Mixture: LD50 (ORAL, RAT) IS NOT KNOWN.
Routes of Entry: Inhalation: YES Skin: NO Ingestion: NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:TARGET ORGANS: EYE, SKIN, RESPIRATORY
 & GI TRACTS. ACUTE- MAY BE HARMFUL BY INHALATION OR INGESTION.
 MATERIAL IS IRRITATING TO EYES, SKIN, MUCOUS MEMBRANES & UPPER
 RESPIRATORY TRACT. MAY CAUSE DERMATI TIS. THE CHEMICAL, PHYSICAL
 AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.
 CHRONIC- UNKNOWN.

Explanation of Carcinogenicity:NONE

Effects of Overexposure:IRRITATION, BURNING SENSATION, COUGHING,
 WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA,
 VOMITING, DERMATITIS

Medical Cond Aggravated by Exposure:PERSONS WITH SENSITIVITY TO SULFUR

===== First Aid Measures =====

First Aid:GET MEDICAL HELP IF SYMPTOMS PERSIST. INHALED: MOVE TO FRESH
 AIR. PROVIDE CPR/OXYGEN IF NEEDED. EYES: FLUSH WITH WATER FOR 15
 MINUTES, HOLDING EYELIDS OPEN. SKIN: FLUSH WITH WATER FOLLOWED BY
 WASHING SKIN WITH SOAP & WATER. ORAL: IF CONSCIOUS, WASH OUT MOUTH
 WITH WATER. GET MEDICAL ATTENTION IMMEDIATELY.

===== Fire Fighting Measures =====

Flash Point:FLAMMABLE SOLID

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, SAND, FOAM/DRY
 CHEMICAL. WATER SPRAY MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS
 COOL.

Fire Fighting Procedures:WEAR PROTECTIVE CLOTHING AND NIOSH-APPROVED
 SELF-CONTAINED BREATHING APPARATUS. AVOID STRAIGHT STREAM OF WATER
 WHICH WILL SCATTER MOLTEN SULFUR AND DUST.

Unusual Fire/Explosion Hazard:DUST OR VAPOR FORMS EXPLOSIVE MIXTURES
 WITH AIR. IT EMITS TOXIC GASES OF SULFUR OXIDES.

===== Accidental Release Measures =====

Spill Release Procedures:WEAR PROPER PROTECTIVE CLOTHING AND
 EQUIPMENTS. VENTILATE AREA. SWEEP UP AND PLACE IN A SUITABLE
 CONTAINER FOR RECYCLING OR DISPOSAL. AVOID GENERATING DUST. WASH
 SPILL SITE AFTER MATERIAL PICK UP IS C COMPLETE.

Neutralizing Agent:NOT RELEVANT

===== Handling and Storage =====

Handling and Storage Precautions:STORE IN COOL, DRY, VENTILATED PLACE
 AWAY FROM FIRE, SPARK, INCOMPATIBLE MATERIALS. ALL ELECTRIC MOTORS
 IN THE AREA SHOULD BE OF EXPLOSIVE PROOF TYPE.

Other Precautions:AVOID BREATHING DUSTS. DO NOT GET IN EYES, ON SKIN OR
 ON CLOTHING. WASH THOROUGHLY AFTER HANDLING. KEEP OUT OF REACH OF
 CHILDREN. USE IN WELL VENTILATED AREA. WASH CONTAMINATED CLOTHING
 BEFORE REUSE. KEEP CONTAINER TIGHTLY CLOSED.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NONE SHOULD BE NEEDED IN NORMAL LABORATORY
 HANDLING. IF DUSTY CONDITIONS PREVAIL, WORK IN FUME HOOD OR WEAR A
 NIOSH- APPROVED RESPIRATOR FOR DUST OR FUMES.

Ventilation:USE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR
 DUST LEVELS AS LOW AS POSSIBLE.

Protective Gloves:RUBBER

Eye Protection:CHEMICAL GOGGLES/SAFETY GLASSES

Other Protective Equipment:PROTECTIVE CLOTHING AS NEEDED TO PREVENT
PROLONGED/REPEATED SKIN CONTACT, EYE WASH STATION AND SAFETY
SHOWER.

Work Hygienic Practices:OBSERVE GOOD INDUSTRIAL HYGIENE PRACTICES AND
RECOMMENDED PROCEDURES. WASH THOROUGHLY BEFORE EATING,
DRINKING/SMOKING.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

HCC:F8

NRC/State Lic Num:NOT RELEVANT

Boiling Pt:=445.C, 833.F

Melt/Freeze Pt:=112.2C, 234.F

Spec Gravity:2.070

Viscosity:NOT RELEVANT

Solubility in Water:INSOLUBLE

Appearance and Odor:YELLOW CRYSTALLINE POWDER - CHARACTERISTIC SULFUR
ODOR

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

OXIDIZING AGENTS

Stability Condition to Avoid:MOISTURE

Hazardous Decomposition Products:SULFUR OXIDES

===== Disposal Considerations =====

Waste Disposal Methods:OBSERVE LOCAL, STATE AND FEDERAL REGULATIONS.
MATERIAL SHOULD BE IGNITED IN PRESENCE OF SODIUM CARBONATE AND
CALCIUM HYDROXIDE. MIX WITH VERMICULITE. THEN WITH DRY CAUSTICS.
INCINERATE IN A CHEMICAL INCINERATOR WITH AN AFTERBURNER AND
SCRUBBER.

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EASTMAN KODAK COMPANY -- 188 7660, SIEMENS NIXDORF TONER FOR PRINTER ND50 -
- 6750-00D004241

===== Product Identification =====

Product ID:188 7660, SIEMENS NIXDORF TONER FOR PRINTER ND50

MSDS Date:06/16/1996

FSC:6750

NIIN:00D004241

MSDS Number: BYFJD

=== Responsible Party ===

Company Name:EASTMAN KODAK COMPANY

Address:343 STATE STREET

City:ROCHESTER

State:NY

ZIP:14650

Country:US

Info Phone Num:716-477-3194 MSDS :800- 242-2424

Emergency Phone Num:716-722-5151

CAGE:19139

=== Contractor Identification ===

Company Name:EASTMAN KODAK CO GOVERNMENT MARKETS CONTRACTS

Address:343 STATE ST

Box:City:ROCHESTER

State:NY

ZIP:14650-1115

Country:US

Phone:716-722-5151/(800) 242-2424

CAGE:19139

Company Name:EASTMAN KODAK CO US CUSTOMER SERVICE/GOVERNMENT SALES

Address:800 LEE RD

Box:City:ROCHESTER

State:NY

ZIP:14650-3129

Country:US

Phone:800-828-6203

CAGE:5K871

===== Composition/Information on Ingredients =====

Ingred Name:ACRYLIC ACID BUTYL ESTER POLYMER WITH STYRENE

CAS:25767-47-9

Fraction by Wt: 90-95% %

Other REC Limits:NONE RECOMMENDED

Ingred Name:CARBON BLACK

CAS:1333-86-4

RTECS #:FF5800000

Fraction by Wt: 5-10% %

Other REC Limits:NONE RECOMMENDED

OSHA PEL:3.5 MG/M3

ACGIH TLV:3.5 MG/M3; 9192

===== Hazards Identification =====

LD50 LC50 Mixture:TLV: CARBON BLACK: 3.5 MG/M3 TWA

Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:INHALATION: EXPECTED TO BE LOW HAZARD

FOR RECOMMENDED HANDLING. EYES: NO SPECIFIC HAZARD KNOWN. MAY CAUSE TRANSIENT IRRITATION. SKIN: EXPECTED TO BE A LOW HAZARD FOR RECOMMENDED HANDLING. INGESTION: EXPECTED TO BE A LOW INGESTION HAZARD.

Explanation of Carcinogenicity:NO INGREDIENT OF A CONCENTRATION OF 0.1% OR GREATER IS LISTED AS A CARCINOGEN OR SUSPECTED CARCINOGEN.

Effects of Overexposure:OVEREXPOSURE TO CARBON BLACK DUST MAY RESULT IN IRRITATION OF THE RESPIRATORY TRACT AND BENIGN DEPOSITION OF CARBON BLACK IN THE LUNG.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

=====
First Aid Measures
=====

First Aid:INHALATION-IF SYMPTOMATIC, MOVE TO FRESH AIR. GET MEDICAL ATTENTION IF SYMPTOMS PERSIST. EYES-ANY MATERIAL THAT CONTACTS THE EYE SHOULD BE WASHED OUT IMMEDIATELY WITH WATER. GET MEDICAL ATTENTION IF SYMPTOMS OCCUR. SKIN-WASH WITH SOAP & WATER. GET MEDICAL ATTENTION IF SYMPTOMS OCCUR. INGESTED-DRINK 1-2 GLASSES OF WATER. SEEK MEDICAL ATTENTION.

=====
Fire Fighting Measures
=====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL.

Fire Fighting Procedures:NONE.

Unusual Fire/Explosion Hazard:POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURE.

=====
Accidental Release Measures
=====

Spill Release Procedures:DO NOT USE A VACUUM CLEANER TO CLEAN UP SPILLS OF POWDERED TONERS. THE VERY FINE PARTICLES CAN CAUSE A FIRE OR EXPLOSION. SWEEP MATERIAL ONTO PAPER AND PLACE IN A FIBER CARTON.

Neutralizing Agent:NONE.

=====
Handling and Storage
=====

Handling and Storage Precautions:KEEP CONTAINER CLOSED.

Other Precautions:AVOID BREATHING DUST. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:NONE SHOULD BE NEEDED.

Ventilation:GOOD VENTILATION (TYPICALLY 4-6 ROOM VOLUMES/HR) SHOULD BE USED. VENTILATION RATES SHOULD BE MATCHED TO CONDITIONS.

Protective Gloves:IMPERVIOUS GLOVES SHOULD BE WORN.

Eye Protection:SAFETY GLASSES WITH SIDE SHIELDS.

Other Protective Equipment:WASHING FACILITIES. IT IS A GOOD INDUSTRIAL HYGIENE PRACTICE TO MINIMIZE SKIN CONTACT.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

CAUTION! POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURE.

=====
Physical/Chemical Properties
=====

HCC:N1

Melt/Freeze Pt:M.P/F.P Text:140F, 60C

Vapor Pres:NEGLIGIBLE

Vapor Density:NEGLIGIBLE

Spec Gravity:1.17

Solubility in Water:NEGLIGIBLE
Appearance and Odor:SOLID. BLACK. SLIGHT ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:STABLE.
Hazardous Decomposition Products:CARBON DIOXIDE, CARBON MONOXIDE.
Conditions to Avoid Polymerization:WILL NOT OCCUR.

===== Disposal Considerations =====

Waste Disposal Methods:CAN BE INCINERATED WHEN INCOMPLIANCE WITH LOCAL
REGULATIONS. CONTRACT WITH A LICENSED CHEMICAL DISPOSAL AGENCY.
DISCHARGE, TREATMENT OR DISPOSAL MAY BE SUBJECT TO NATIONAL, STATE
OR LOCAL LAWS.

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particular situation.

AMOCO PERFORMANCE PRODUCTS INC -- THORNEL CARBON FIBER T-300 -- 6850-00N011103

==== Product Identification =====

Product ID:THORNEL CARBON FIBER T-300
 MSDS Date:12/28/1988
 FSC:6850
 NIIN:00N011103
 MSDS Number: BJJTT
 === Responsible Party ===
 Company Name:AMOCO PERFORMANCE PRODUCTS INC
 Address:200 EAST RANDOLPH DRIVE
 City:CHICAGO
 State:IL
 ZIP:60601
 Info Phone Num:312-856-3304
 Emergency Phone Num:800-447-8735;312-856-3304
 Preparer's Name:RICHARD A SYMULESKI
 CAGE:15958

==== Contractor Identification ===

Company Name:AMOCO INTL OIL CO
 Address:200 E RANDOLPH DR
 Box:5910-A
 City:CHICAGO
 State:IL
 ZIP:60680
 Country:US
 Phone:800-652-6626
 CAGE:6G027
 Company Name:AMOCO OIL CO
 Address:200 E RANDOLPH DR
 Box:City:CHICAGO
 State:IL
 ZIP:60601-6401
 Country:US
 Phone:312-856-3907- EM HLTH: 800 447-8735
 CAGE:15958

==== Composition/Information on Ingredients =====

Ingred Name:GRAPHITE, SYNTHETIC
 CAS:7440-44-0
 RTECS #:FF5250100
 Other REC Limits:3 FIBERS/CC
 OSHA PEL:15 MG/M3 TDUST
 ACGIH TLV:2 MG/M3 TDUST; 9293

==== Hazards Identification =====

LD50 LC50 Mixture:N/K
 Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:HAZ EVALUATION BASED ON INFO FROM
 SIMILAR PROD,INGRED,TECHNICAL LITERATURE/PROFESSIONAL EXPERIENCE.NO
 ADVERSE HEALTH EFFECTS WERE SEEN IN A 16-WEEK INHALATION STUDY ON A
 SIMILAR MATERIAL WITH RATS.TYP ICAL CARBON FIBER MAY HAVE A LARGE
 DIAMETER AND GREAT LENGTH (>100 MICRONS).FIBERS W/ DIAMETERS >3.5
 MICRONS (SEE SUPP)

Explanation of Carcinogenicity:NONE

Effects of Overexposure:EYES:AIRBORNE FIBERS/PARTICLES CAUSE MILD/MECHANICAL IRRITATION.SKIN:NO SIGNIFICANT IRRITATION EXPECTED.POSSIBLE MECHANICAL IRRITATION DURING HANDLING/PROCESSING.INGESTION:EXPECTED TO BE RELATIVELY NON-TOXIC.INHALATION:NO SIGNIFICANT HEALTH HAZ IDENTIFIED.HANDLING/PROCESSING CAN CAUSE MECHANICAL IRRITATION OF NOSE, THROAT.

Medical Cond Aggravated by Exposure:N/K

===== First Aid Measures =====

First Aid:EYES:FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.GET MEDICAL ATTENTION IF IRRITATION PERSISTS.SKIN:WASH WITH SOAP AND WATER.INGESTION:IF A LARGE AMOUNT IS SWALLOWED,GET MEDICAL ATTENTION.INHALATION:GET MEDICAL ATTENTION.

===== Fire Fighting Measures =====

Lower Limits:N/K

Upper Limits:N/K

Extinguishing Media:AGENTS APPROVED FOR CLASS A HAZARDS (HALOGENATED AGENTS, FOAM, STEAM) OR WATER FOG.

Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:INCINERATION MAY GENERATE AIRBORNE FIBERS WHICH MAY CAUSE ELECTRICAL MALFUNCTIONS.HAZARDOUS DECOMPOSITION PRODUCTS:NONE.

===== Accidental Release Measures =====

Spill Release Procedures:CONTAIN AND REMOVE BY MECHANICAL MEANS.BAG OR CONTAINERIZE SPILLED/RELEASED/DISCARDED MATERIALS.

Neutralizing Agent:N/K

===== Handling and Storage =====

Handling and Storage Precautions:CARBON FIBERS ARE ELECTRICALLY CONDUCTIVE AND MAY CAUSE SHORT CIRCUITS WHICH RESULT IN DAMAGE TO OR MALFUNCTIONING OF ELECTRICAL EQUIPMENT.

Other Precautions:ALL FORMS OF ELECTRICAL EQUIPMENT, ENCLOSURES AND CIRCUITS IN OR NEAR AREAS WHERE FIBERS ARE USED OR HANDLED SHOULD BE PROPERLY PROTECTED AGAINST THE INFILTRATION OF/CONTACT WITH AIRBORNE PARTICLES/FILAMENTS.NO SPECIAL STORAGE REQUIREMENTS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN .

Ventilation:LOCAL AND GENERAL VENTILATION NECESSARY TO KEEP AIR CONCENTRATION BELOW LEVEL OF CONCERN .

Protective Gloves:REQUIRED

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:LONG SLEEVE GARMENTS WITH TIGHT-FITTING CUFFS.USE BARRIER CREAMS OR TALCUM FOR ADDITIONAL SKIN PROTECTION.

Work Hygienic Practices:CHANGE CLOTHING IF IRRITATION OCCURS.USE GOOD INDUSTRIAL HYGIENE PRACTICES.

Supplemental Safety and Health

ROUTES OF ENTRY:INHALATION/SKIN/INGESTION .HEALTH HAZ:ARE NOT CONSIDERED RESPIRABLE (MFR).DENSITY:2000 KG/M3.

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:N/K
Melt/Freeze Pt:M.P/F.P Text:6512F,3600C
Decomp Temp:Decomp Text:N/K
Vapor Pres:N/K
Vapor Density:N/K
Spec Gravity:N/K
Evaporation Rate & Reference:N/K
Solubility in Water:NEGLIGIBLE (<0.1%)
Appearance and Odor:BLACK,ODORLESS FIBERS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
NO DANGEROUS REACTIONS IDENTIFIED.
Stability Condition to Avoid:NO DANGEROUS REACTIONS IDENTIFIED.
Hazardous Decomposition Products:NONE
Conditions to Avoid Polymerization:POLYMERIZATION WILL NOT OCCUR.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE WITH
FEDERAL, STATE AND LOCAL REGULATIONS .DO NOT INCINERATE.BURIAL OF
BAGGED OR CONTAINERIZED MATERIALS AT A PERMITTED LANDFILL IS
RECOMMENDED.

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CATHODIC ENGINEERING EQUIPMENT CO -- CALCINED FLUID PETROLEUM COKE
LORESCO TYPE -- 9150-00N030287

===== Product Identification =====

Product ID:CALCINED FLUID PETROLEUM COKE LORESCO TYPE

MSDS Date:01/01/1989

FSC:9150

NIIN:00N030287

MSDS Number: BNQNO

=== Responsible Party ===

Company Name:CATHODIC ENGINEERING EQUIPMENT CO

Address:AIRPORT ROAD

Box:1089

City:HATTIESBURG

State:MS

ZIP:39403

Country:US

Info Phone Num:601-544-7490

Emergency Phone Num:601-544-7490

CAGE:5Z591

=== Contractor Identification ===

Company Name:CATHODIC ENGINEERING EQUIPMENT CO

Address:AIRPORT ROAD

Box:City:HATTIESBURG

State:MS

ZIP:39403

Country:US

Phone:601-544-7490

CAGE:5Z591

===== Composition/Information on Ingredients =====

Ingred Name:CARBON. EXPOSURE LIMITS FOR NUISANCE PARTICULATES.

CAS:7440-44-0

RTECS #:FF5250100

Fraction by Wt: 93-95%

OSHA PEL:15 MG/M3 TDUST

ACGIH TLV:2 MG/M3 TDUST; 9293

Ingred Name:SULFUR

CAS:7704-34-9

RTECS #:WS4250000

Fraction by Wt: 5-7%

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.

Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:INHAL: BREATHING DIFFICULT IF DUST

CONCENTRATION EXTREMELY HIGH; MAY AGGRAVATE PRE-EXISTING

RESPIRATORY CONDITIONS. SKIN CONTACT: NO IRRITATION EXPECTED. EYE

CONTACT: MAY IRRITATE EYES. INGESTION: LOW TOXICITY.

Explanation of Carcinogenicity:NOT RELEVANT

Effects of Overexposure:SEE HEALTH HAZARDS.

Medical Cond Aggravated by Exposure:MAY AGGRAVATE PRE-EXISTING

RESPIRATORY CONDITIONS.

===== First Aid Measures =====

First Aid: INHAL: REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL MD. SKIN: WASH WITH SOAP AND WATER. EYES: IMMEDIATELY FLUSH WITH WATER FOR A MINIMUM OF 15 MINUTES TO REMOVE PARTICLES. CALL MD. INGEST: CALL MD IMMEDIATELY.

===== Fire Fighting Measures =====

Extinguishing Media: DRY CHEMICAL TYPE PREFERRED; WATER IN OPEN AREA PERMISSIBLE.

Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT.

Unusual Fire/Explosion Hazard: WILL BURN AT 900F. WATER GAS CAN FORM WHEN WATER IS USED TO EXTINGUISH ENCLOSED COKE FIRE. STEAM FORMATION IN ENCLOSED AREA CAN CAUSE EXPLOSION.

===== Accidental Release Measures =====

Spill Release Procedures: CNTN SPILLAGE & SCOOP UP/VACUUM. AVOID DUSTING. NOTIFICATION OF NRC MAY BE REQD. REFER TO EPA, DOT & APPLIC FED/ STATE/LOC REG FOR CURRENT RESPONSE INFO. IT IS RECOMM THAT EACH USER ESTABLISH A SPILL PVNTN/CTL/COUNTERMEASURE PLAN (SPCC). (SUPP DATA)

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions: NONE SPECIFIED BY MANUFACTURER.

Other Precautions: CARBON DUST IS ELECTRICALLY CONDUCTIVE. DUST ACCUMULATIONS CAN CAUSE SHORT CIRCUITS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATORY PROTECTION AS NECESSARY.

Ventilation: NONE SPECIFIED BY MANUFACTURER.

Protective Gloves: NOT NORMALLY NECESSARY.

Eye Protection: CHEMICAL WORKERS GOGGLES.

Other Protective Equipment: NOT NORMALLY NECESSARY.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

SPILL PROC: SUCH PLAN SHOULD INCLUDE PROCEDURES APPLICABLE TO PROPER STORAGE, CONTROL AND CLEAN-UP OF SPILLS, INCLUDING REUSE OR DISPOSAL AS APPROPRIATE. WASTE DISP METH: SOME WASTE MATERIALS ARE AMEN ABLE TO RECYCLE/REUSE.

===== Physical/Chemical Properties =====

HCC: V6

Spec Gravity: 1.9 (H₂O=1)

Solubility in Water: NIL

Appearance and Odor: SOLID, SMALL, (1MM) B-B LIKE SPHERES, ODORLESS.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES

INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, ESPECIALLY WHEN HEATED.

Stability Condition to Avoid: TEMPERATURES AT AND ABOVE 900F.

Hazardous Decomposition Products: COX AND SOX.

===== Disposal Considerations =====

Waste Disposal Methods:FED/STATE/LOC DISP LAWS/REGS WILL DETERM PROPER
WASTE DISP PROC. ALL WASTE MATLS SHLD BE REVIEWED TO DETERM APPLIC
HAZ (TESTING MAY BE NEC). DISPOSAL REQ ARE DEPENDENT ON HAZ
CLASSIFICATION & WILL VAR Y BY LOCATION/TYPE OF DISP SELECTED.
(SUPP DATA)

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HUMMEL CHEMICAL COMPANY,INC. -- PHOSPHORUS,RED -- 6810-00D000505

===== Product Identification =====

Product ID:PHOSPHORUS,RED
MSDS Date:01/01/1987
FSC:6810
NIIN:00D000505
MSDS Number: BBCVH
=== Responsible Party ===
Company Name:HUMMEL CHEMICAL COMPANY,INC.
Address:10 HARMICH RD
Box:250
City:SOUTH PLAINFIELD
State:NJ
ZIP:07080
Country:US
CAGE:60728

=== Contractor Identification ===

Company Name:HUMMEL CROTON INC
Address:10 HARMICH ROAD
Box:City:SOUTH PLAINFIELD
State:NJ
ZIP:07080
Country:US
Phone:908-754-1800
CAGE:60728

===== Composition/Information on Ingredients =====

Ingred Name:PHOSPHORUS,RED,AMORPHOUS,CAS#7723-14-0
CAS:7723-14-0
RTECS #:TH3495000
Fraction by Wt: 100%
ACGIH TLV:0.1MG/CUM-YELL.
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

===== Hazards Identification =====

Effects of Overexposure:IRR.TO EYES;OTHERWISE NON-TOX.UNLESS CONTAM.BY
HIGHLY TOX.YELLOW PHOSPHORUS AS AN IMPURITY.

===== First Aid Measures =====

First Aid:SKIN:WASH WITH SOAP AND WATER. EYES: FLUSH WITH WATER.
INHALED: REMOVE TO FRESH AIR. REMOVE CONTAMINATED CLOTHING.ING:SEE
DOCTOR IMMEDIATELY.

===== Fire Fighting Measures =====

Extinguishing Media:CO*2, FOAM, DRY CHEM, SAND
Fire Fighting Procedures:AFTER EXTINGHISH,PREVENT REIGN.BY
EXCL.O*2.KEEP MTL.WET.
Unusual Fire/Explosion Hazard:HEAT CAN REVERSE TO YELL.PHOSP.WHICH IS
TOX.&SPONTANEOUSLY FLAMM.BURNING YIELDS TOX.OXIDES OF PHOSP.

===== Accidental Release Measures =====

Spill Release Procedures:COVER W/INERT FILLER (SAND,CLAY,ETC.),SHOVEL &
SWEEP UP CAREFULLY FOR RECLAIM OR USE-REPEAT IF NECESSARY TO CLEAN
UP LAST TRACES OF SPILL.

=====
Handling and Storage
=====

Handling and Storage Precautions:STORE IN COOL,DRY PLACE AWAY FROM HEAT
OR FIRE HAZ.KEEP SEPARATE FROM OXIDIZERS & ALKALIES.HANDLE
CAREFULLY TO AVOID FRICTION OR DUSTING.

Other Precautions:USE NON-SPARKING TOOLS.

=====
Exposure Controls/Personal Protection
=====

Respiratory Protection:DUST MASK,NUISANCE DUST.

Ventilation:NORMAL ROOM VENTILATION.

Protective Gloves:FLAME PROOF

Eye Protection:CHEM.SAFETY GLASSES

Other Protective Equipment:FLARE PROOF,FULL PROTECT.EQUIPM.

Supplemental Safety and Health

MSDS UNDATED/BULK DENSITY:0.95-1.20/

=====
Physical/Chemical Properties
=====

HCC:F8

Boiling Pt:B.P. Text:395F-IGNITE

Vapor Density:4.77

Spec Gravity:SUPPL.

Solubility in Water:NEGL.

Appearance and Odor:VIOLET-RED,AMORPHOUS POWDER

=====
Stability and Reactivity Data
=====

Stability Indicator/Materials to Avoid:YES

OXIDIZERS LIKE CHLORATE,NITRATE,HALOGEN-STRONG ALK.HYDROXIDE

Stability Condition to Avoid:HEAT,SPARKS,FRICTION,MECHANICAL SHOCK.

Hazardous Decomposition Products:AIR & MOISTURE LIBERATE P ACIDS &
TOXIC,FLAMM.PHOSPHINE GAS.

=====
Disposal Considerations
=====

Waste Disposal Methods:RECOVER AND USE OR INCINERATE UNDER CAREFUL
SUPERVISION IN EQUIPMENT DESIGNED TO HANDLE OXIDES OF PHOSPHORUS AS
COMBUSTION PRODUCTS.

Disclaimer (provided with this information by the compiling agencies):
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assume responsibility for the suitability of this information to their
particular situation.

CHEVRON ENVIRONMENTAL HEALTH CENTER, INC -- ORTHO BLOOD MEAL 12-0-0 --
8720-00F010026

===== Product Identification =====

Product ID: ORTHO BLOOD MEAL 12-0-0
MSDS Date: 10/07/1986
FSC: 8720
NIIN: 00F010026
MSDS Number: BHRPZ
=== Responsible Party ===
Company Name: CHEVRON ENVIRONMENTAL HEALTH CENTER, INC
Box: 4054
City: RICHMOND
State: CA
ZIP: 94804
Info Phone Num: (415) 233-3737
Emergency Phone Num: (415) 233-3737
CAGE: 0AHD1

=== Contractor Identification ===

Company Name: CHEVRON ENVIRONMENTAL HEALTH CENTER INC
Address: 15299 SAN PABLO AVE
Box: 4054
City: RICHMOND
State: CA
ZIP: 94804
Country: US
Phone: 800-582-3835
CAGE: 0AHD1
Company Name: CHEVRON RESEARCH CO
Address: 576 STANDARD AVE
Box: City: RICHMOND
State: CA
ZIP: 94804
Country: US
Phone: 510-237-4411
CAGE: 96004

===== Composition/Information on Ingredients =====

Ingred Name: BLOOD MEAL
Fraction by Wt: 100%
Other REC Limits: 10 MG/CUM (DUST)
ACGIH TLV: 5 MG/CUM (DUST)

===== Hazards Identification =====

LD50 LC50 Mixture: ORAL RAT LD50: >5 G/KG
Routes of Entry: Inhalation: YES Skin: NO Ingestion: NO
Reports of Carcinogenicity: NTP: NO IARC: NO OSHA: NO
Health Hazards Acute and Chronic: EYE: MINOR IRRITATION, MEMBRANE
IRRITATION W/OUT CORNEAL INJURY. SKIN: NOT EXPECTED TO BE
IRRITATING. INHALATION: BREATHING THE DUST AT CONCENTRATIONS IN AIR
THAT EXCEED THE RECOMMENDED EXPOSURE STAND ARD MAY BE IRRITATING TO
THE RESPIRATORY TRACT. INGESTION: NOT EXPECTED TO BE TOXIC.
Explanation of Carcinogenicity: NONE
Effects of Overexposure: EYE: MINOR IRRITATION, MEMBRANE IRRITATION
W/OUT CORNEAL INJURY. SKIN: NOT EXPECTED TO BE IRRITATING.
INHALATION: BREATHING THE DUST AT CONCENTRATION IN AIR THAT EXCEED

THAT RECOMMENDED EXPOSURE STANDARD MAY BE IRRITATING TO THE RESPIRATORY TRACT.

===== First Aid Measures =====

First Aid: EYES: FLUSH W/FRESH WATER FOR AT LEAST 15 MINS, IF IRRITATION PERSISTS, SEE A DOCTOR. SKIN: WASH THOROUGHLY W/SOAP & WATER. INHALATION: IF RESPIRATORY DISCOMFORT, MOVE THE PERSON TO FRESH AIR. SEE A DOCTOR. INGESTION: GIVE WATER OR MILK. CONSULT MED PERSONNEL BEFORE INDUCING VOMITING. IF MEDICAL ADVICE CAN'T BE OBTAINED, THEN TAKE THE PERSON TO THE MEDICAL EMERGENCY TREATMENT CENTER OR HOSPITAL.

===== Fire Fighting Measures =====

Extinguishing Media: CO₂, DRY CHEMICAL, ALCOHOL FOAM, WATER FOG
 Fire Fighting Procedures: SCBA TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF NORMAL PRODUCTS OF COMBUSTION OR OXYGEN DEFICIENCY.
 Unusual Fire/Explosion Hazard: FOR FIRES INVOLVING THIS MATERIAL, DON'T ENTER ANY ENCLOSED OR CONFINED FIRE SPACE W/O PROPER PROTECTIVE EQUIPMENT.

===== Accidental Release Measures =====

Spill Release Procedures: CLEAN UP SPILLS IMMEDIATELY, OBSERVING PRECAUTIONS IN SPECIAL PROTECTIVE INFORMATION.

===== Handling and Storage =====

Handling and Storage Precautions: KEEP OUT OF REACH OF CHILDREN. DON'T GET IN EYES.

===== Exposure Controls/Personal Protection =====

Respiratory Protection: AIRBORNE CONCENTRATIONS WHICH EXCEED THE RECOMMENDED EXPOSURE STANDARD, THE USE OF AN APPROVED RESPIRATOR IS RECOMMENDED.

Ventilation: USE ADEQUATE VENTILATION TO KEEP THE AIRBORNE CONCENTRATIONS OF THIS MATERIAL <TLV.

Protective Gloves: NO SPECIAL SKIN PROTECTION IS NECESSARY

Eye Protection: SAFETY GOGGLES

Work Hygienic Practices: THERE IS NO TLV FOR PRODUCTS. USE TLV 10 MG/CUM TOTAL DUST OR 5 MG/CUM RESPIRABLE DUST/NUISANCE PARTICLES.

Supplemental Safety and Health

===== Physical/Chemical Properties =====

Appearance and Odor: FINE, DARK REDDISH-BROWN POWDER.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid: YES
 REACT W/STRONG OXIDIZING MATERIALS

Hazardous Decomposition Products: CO₂, WATER VAPOR, CO

===== Disposal Considerations =====

Waste Disposal Methods: IF SAFE AND PRACTICABLE, RECLAIM MATERIAL.

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SECTION VI - Health Hazard Data

- 6.1 Primary route(s) of entry:** Inhalation?: Yes Skin?: No Ingestion?: Yes
- 6.2 Health hazards (acute and chronic):** Acute: Transitory upper respiratory irritation or eye irritation. Chronic: Inhalation of crystalline silica has been classified by IARC as carcinogenic for humans (Group 1). Inhalation of crystalline silica is also a known cause of silicosis, a non-cancerous lung disease caused by excessive exposure to crystalline silica. Respirable dust from this product may contain up to 38 % free crystalline silica (Cristobalite). As such it represents a risk to the respiratory system. Long term, unprotected exposure to dust levels in excess of the TLV or PEL may cause lung disease (silicosis).
- 6.3 Carcinogenicity:** NTP?: Proposed IARC monographs?: Yes (Group 1) OSHA regulated?: Yes
- 6.4 Signs and symptoms of exposure:** Inhalation: Irritation and soreness in throat and nose. In extreme exposures some congestion may occur. Eyes: Temporary irritation or inflammation. Not hazardous when ingested.
- 6.5 Medical conditions generally aggravated by exposure:** Pre existing upper respiratory and lung diseases such as but not limited to bronchitis, emphysema, and asthma. Target organs: Lungs, Eyes.
- 6.6 Emergency first aid procedures:** Remove to fresh air. Drink water to clear throat and blow nose to evacuate dust. For eyes flush with copious amounts of water for 15 minutes. If irritation persists consult a physician.
-

SECTION VII - Precautions for Safe Handling and Use

- 7.1 Steps to be taken in case material is released or spilled:** Vacuum clean dust with equipment fitted with a HEPA filter. Use dust suppression such as water if sweeping is necessary. Sweep up spilled material and place in closed containers for disposal.
- 7.2 Waste disposal methods:** Dispose of in accordance with Federal, State and Local regulations.
- 7.3 Precautions to be taken in handling and storage:** Minimize dust generation and accumulation. Avoid breathing dust, avoid contact with eyes. Return cap to canisters immediately. Close pouches immediately after use. Continue to follow all MSDS/label warnings when handling empty containers. Observe normal warehouse handling procedures. Store in a cool dry area. Store away from foodstuffs and beverages.
- 7.4 Other precautions:** The avoidance of any air contaminant is always a recommended practice. Adherence to work place ventilation standards is an assurance of general personnel health and comfort. Handling of this product should be by trained ental healthcare professionals only.
-

SECTION VIII – Control Measures / Personal Protection

- 8.1 Respiratory protection:** Recommended NIOSH approved nuisance dust mask. <10X PEL, use 3M 9900; <100X PEL, use MSA Ultra-Twin with H filter; <200X PEL, use MSA 01-00-06 with type C supplied air unit (continuous flow mode); or equivalent.
- 8.2 Ventilation:** Use sufficient natural or mechanical ventilation to keep dust level below PEL.
- 8.3 Protective gloves:** Rubber gloves.
- 8.4 Eye protection:** Goggles or safety glasses with sideshields.
- 8.5 Other protective clothing or equipment:** Rubber apron.
- 8.6 Work/Hygienic practices:** Avoid dusting when in use. Observe normal care when working with chemicals..

NFPA HAZARD CLASSIFICATIONS	
Health	2
Flammability	0
Reactivity	0
Specific Hazard	N. A.

NFPA – National Fire Protection Association
N.A. - Not Applicable
N.E. - Not Established

505502 (R-10-17-02)

MSDS Number: G1475 * * * * * Effective Date: 05/14/03 * * * * * Supercedes: 11/02/01



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

GelTwin™ II Agarose Additive

1. Product Identification

Synonyms: Agarose additive
CAS No.: Not applicable to mixtures.
Molecular Weight: Not applicable to mixtures.
Chemical Formula: Not applicable to mixtures.
Product Codes: 4370

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Proprietary Mixture, TSRN004314011-5046	N/A	100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY

TRACT. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Large quantities of inhaled material could cause irritation of the upper respiratory tract. A tickling cough is a common symptom.

Ingestion:

May cause gastric irritation, nausea and diarrhea. Large doses produce vomiting, chills, dizziness, chest pain, heart failure and pulmonary edema.

Skin Contact:

May cause irritation and discoloration of sensitive skin areas.

Eye Contact:

May cause irritation, redness and pain.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

No information found.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If large amounts were swallowed, give water to drink and get medical advice.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Fire Extinguishing Media:

Water spray, carbon dioxide, or dry powder.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Pressure from the extinguishing media may cause severe dusting.

6. Accidental Release Measures

~~Remove all sources of ignition.~~ Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Store At A Temperature Not Exceeding 30C (86F). Keep in a tightly closed container. Protect against physical damage. Isolate from any source of heat or ignition. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White powder.

Odor:

Odorless.

Solubility:

No information found.

Density:

No information found.

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

No information found.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Proprietary Mixture, TSRN004314011-5046	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Proprietary Mixture, TSRN004314011-5046	Yes	Yes	No	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	DSL	--Canada-- NDSL	Phil.
Proprietary Mixture, TSRN004314011-5046	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Proprietary Mixture, TSRN004314011-5046	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Proprietary Mixture, TSRN004314011-5046	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
Reactivity: No (Mixture / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR.

Label Precautions:

Store in a tightly closed container.
Avoid dust cloud in presence of an ignition source.
Maintain adequate ventilation.
Avoid breathing dust.
Wash thoroughly after handling.
Avoid contact with eyes, skin and clothing.

Label First Aid:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes.

Product Use:

Agarose clarifier

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Section V ---- Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	None

Incompatibility (Materials to Avoid) **Strong oxidizing agent**

Hazardous Decomposition or Byproducts **Carbon monoxide, carbon dioxide**

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	None

Section VI ---- Health Hazard Data

Route(s) of Entry: Inhalation? **Yes** Skin? **Yes** Ingestion? **No**

Health Hazards (Acute and Chronic) **Excessive inhalation of dust can impede respiration. May cause loose stool and diarrhea if ingested. No known acute or chronic effects.**

Carcinogenicity: **No** NTP? **No** IARC Monographs? **No** OSHA Regulated? **No**

Signs and Symptoms of Exposure **None**

Medical Conditions Generally Aggravated by Exposure **None**

Emergency and First Aid Procedures **Non-irritating, non-toxic**

Section VII ---- Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled **No special requirements**

Waste Disposal Method **Dispose in accordance with Federal and State laws. Sample is not hazardous waste.**

Precautions to be Taken in Handling and Storing **None**

Other Precautions **None**

Section VIII ---- Control Measures

Respiratory Protection (Specify Type) **None**

Ventilation	Local Exhaust	None	Special	None
	Mechanical (General)	None	Other	None

Protective Gloves **None required** Eye Protection **None required**

Other Protective Clothing or Equipment **None required**

Work/Hygienic Practices **Safe manufacturing/laboratory procedures**



Revised: 01/03/05

1. Chemical Product and Contact Information**Product Name: Dextrin Solution****Part Number:
502-010****LECO Corporation****3000 Lakeview****St. Joseph, Michigan 49085****Information: 269-983-5531****Chemtrec: 800-424-9300****(Chemtrec Int'l: 703-527-3887)****2. Composition/Information on Ingredients**

<u>Component</u>	<u>CAS No.</u>	<u>OSHA PEL (mg/m³)</u>	<u>ACGIH TLV (mg/m³)</u>	<u>Typical % by Weight</u>
Dextrin	9004-53-9	Not avail.	Not avail.	> 90
Salicylic Acid	69-72-7	Not avail.	Not avail.	< 10

3. Hazard Identification**EMERGENCY OVERVIEW****WARNING! May form combustible dust concentrations in air. Cream colored powder.****Potential Health Effects**

EYES: Can be irritating.

SKIN: Can be irritating.

INHALATION: Can be irritating.

INGESTION: Large doses may cause gastro-intestinal upset.

MEDICAL CONDITIONS AGGRAVATED: No information found.

CHRONIC OVEREXPOSURE: No information found.

CARCINOGENICITY: None.

www.leco.org/customer-support/msds/006-010/00950.pdf

P/N: 502-010

4. First Aid Measures

EYES: Immediately flush eyes with copious amounts of water for at least 15 minutes.
SKIN: Immediately wash with soap and copious amounts of water. Wash contaminated clothing before reuse.
INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
INGESTION: Wash out mouth with water provided person is conscious. Call a physician.

5. Fire Fighting Measures

FLAMMABLE PROPERTIES: Non-flammable. As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source. ~~Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.~~ Minimum explosible concentration is 0.050 g/l.
HAZARDOUS COMBUSTION PRODUCTS: Dextrin emits toxic fumes of carbon monoxide and carbon dioxide under fire conditions.
EXTINGUISHING MEDIA: Water spray, carbon dioxide, dry chemical powder, alcohol or polymer foam.
FIREFIGHTING INSTRUCTIONS: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Move exposed containers from fire area, if it can be done without risk. Use water to keep fire-exposed containers cool.

6. Accidental Release Measures

SMALL/LARGE SPILL: Remove all sources of ignition. Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves. With clean shovel, carefully place material into clean, dry container and cover; remove from area and hold for waste disposal. Ventilate area and flush spill site after material pickup is complete.

7. Handling and Storage

HANDLING: Avoid breathing dust; avoid contact with eyes, skin and clothing; wash thoroughly after handling; hygroscopic. ~~Dust may form flammable or explosive mixture with air.~~
STORAGE: Keep container closed. Store in a cool, dry place.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Mechanical exhaust required; use adequate general or local exhaust ventilation to keep fume and dust levels as low as possible.
RESPIRATORY PROTECTION: NIOSH/MSHA-approved respirator.
SKIN AND HAND PROTECTION: Compatible chemical-resistant gloves.
EYE AND FACE PROTECTION: Safety glasses with side shields or chemical goggles.
OTHER PROTECTIVE EQUIPMENT: Not available.

9. Physical and Chemical Properties

APPEARANCE: Cream colored powder.
BOILING POINT: Not available.
FREEZE-MELT POINT: Not established.
VAPOR PRESSURE (mm): Not available.
VAPOR DENSITY (air = 1): Not available.
SOLUBILITY IN WATER: Soluble (Dextrin), Slightly Soluble (Salicylic Acid)
SPECIFIC GRAVITY: Approx. 1.45.
pH: Not available.
ODOR: None.
PERCENT VOLATILES: Approx. 10 % by volume @ 21C (70F).
EVAPORATION RATE (Butyl Acetate = 1): Not available.

10. Stability and Reactivity

CHEMICAL STABILITY: Stable.
INCOMPATIBILITY: Strong oxidizing agents, moisture, light, iodine and metallic salts.
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic fumes of carbon monoxide and carbon dioxide.
HAZARDOUS POLYMERIZATION: None.

11. Toxicological Information

No information found.

12. Ecological Information

No information found.

13. Disposal Consideration

Dispose of in accordance with all applicable federal, state & local environmental regulations.

14. Transportation Information

U.S.A. DOT: Not regulated.

15. Regulatory Information

U.S. FEDERAL REGULATIONS:

TSCA STATUS: On Toxic Substance Control Inventory.

CERCLA REPORTABLE QUANTITY: None.

SARA TITLE III:

Section 302 Extremely Hazardous Substances: None.

Section 311/312: Fire.

Section 313 Toxic Chemicals: None.

RCRA STATUS: Not regulated.

CANADIAN REGULATIONS:

WHMIS: D2A.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 0

Prepared By:

Jason Whitt

Information herein is given in good faith as authoritative and valid; however, no warranty, expressed or implied can be made.

Ancarro

MATERIAL SAFETY DATA SHEET

Date Printed: 02/27/2004

Date Updated: 08/10/2004

Version 1.2

SECTION 1 - PRODUCT AND COMPANY INFORMATION

~~Product Name: Ignitable Liquid Absorbent~~

Product Number: N/A

Brand: ILA for Arson/Fire Investigation

~~Company: Ancarro~~

Address: P.O. Box 594

City, State, Zip, and Country: ~~Indianola, Iowa 50125~~ United States of America

Technical Phone: 888-244-7472

Emergency Phone: (515) 961-0419 (International: 1.011.15159610419)

Fax: (515) 961-2566 (International: 1.011.15159612566)

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENT

SUBSTANCE NAME: Ignitable Liquid Absorbent (ILA)

~~CAS #: N/A (compound)~~

COMPOSITION: 60% to 90% Polyolefin, 10% to 40% Carboxylic acid, & .02% to 3% Anthraquinone class molecules. Other materials: inert and proprietary.

FORMULA: Compound(s) of $C_{18}H_{36}O_2$, $(CH_2-CH_2)_n$, & $C_{20}H_{22}N_2O_2$

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARD: Not considered hazardous under normal conditions of use. Warning: this material should only be use by trained and qualified personnel working in the field of fire origin and cause investigation and in compliance with NFPA 921, "Guide for Fire and Explosion Investigation." The manufacturer strictly prohibits the use of this material for any other reason or its use by any other individuals.

IRRITANT: Suspended powder may cause possible irritation to eyes.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATING

◆HEALTH: 1-slight

◆FLAMMABILITY: 2-moderate

◆REACTIVITY: 0-insignificant (avoid strong Bases, Oxidizing agents, and Reducing agents)

This material will not polymerize.

For additional information on toxicity, refer to Section 11.

SECTION 4 - FIRST AID MEASURES

ORAL EXPOSURE: If swallowed, rinse mouth with water. Large oral doses may cause irritation to the gastrointestinal tract. Ingestion may cause abdominal discomfort, nausea, and diarrhea.

INHALATION EXPOSURE: Contact with suspended powder may cause irritation to the respiratory tract. Symptoms may include coughing and sore throat. If inhaled, remove to fresh air.

DERMAL EXPOSURE: This material will probably not cause skin irritation. In case of contact, wash skin with soap and water.

EYE EXPOSURE: Contact with suspended powder may cause irritation and redness, due to mechanical abrasion. In case of contact, immediately flush eyes with water. Consult a physician if irritation or other symptoms persist.

CHRONIC EXPOSURE: No adverse health effects expected.

SECTION 5 - FIRE FIGHTING MEASURES

EXPLOSION DATA: This material, like most organic materials in powder form, is capable of creating a dust explosion. Suspended dust particles in the atmosphere are combustible and can present a potential explosion hazard in the presence of an ignition source. Keep away from heat, sparks, flame and all other ignition sources. Prevent dust accumulations and dust clouds when mixing and applying this product. When not in use, keep container closed. Clean up dust accumulations by sweeping (do not vacuum). For proper safety of personnel and property, the product container should be emptied and mixed in accordance with instructions and in compliance with NFPA 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastics Industries." Exercise caution when dispensing this product in or around combustible environments as the possible occurrence of a static discharge could ignite dust or vapors and cause a fire or explosion. Modification or use of this product in a way that enhances the dispersion of the particles in the atmosphere could significantly increase the potential of a dust explosion.

FLASH POINT: 235° F 113C, (closed-cup method)

AUTOIGNITION TEMP: N/A

FLAMMABILITY: Moderate

EXTINGUISHING MEDIA: Use water spray, Carbon dioxide, dry chemical powder, or appropriate foam extinguisher.

FIREFIGHTING: Wear self-contained breathing apparatus and protective clothing.

SPECIFIC HAZARDS: Emits CO, CO₂, Hydrocarbon smoke, and Oxides of Nitrogen under fire conditions.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PROCEDURES OF PERSONAL PRECAUTION: If particles are suspended in the atmosphere, wear a respirator and chemical safety goggles. Wearing protective clothing and compatible chemical-resistant gloves (Latex or rubber) are also advisable.

METHODS FOR CLEANING UP: Remove all sources of ignition. Sweep up (do not vacuum), place in a bag and hold for waste disposal by landfill or incineration. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete. Carefully ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE: Keep container tightly closed.

STORAGE COLOR CODE: Green (General Storage)

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION EQUIPMENT

AIRBORNE EXPOSURE LIMITS: OSHA Permissible Exposure Limit (PEL): 15 mg/m³ total dust, 5 mg/m³ respirable fraction for nuisance dusts. ACGIH Threshold Limit Value (TLV) for Particulates (insoluble or poorly soluble) Not Otherwise Specified (PNOS): 3 mg/m³ respirable particles and 10 mg/m³ inhalable particles.

ENGINEERING CONTROLS: N/A

PERSONAL PROTECTIVE EQUIPMENT: Respiratory: Government approved respirator. Hand: Compatible chemical-resistant gloves (Latex or rubber). Eye: Chemical safety goggles. Clothing: Protective clothing such as coveralls or lab coats is advisable.

GENERAL HYGIENE MEASURES: Wash thoroughly after handling.

SECTION 9 - PHYSICAL/CHEMICAL PROPERTIES

APPEARANCE PHYSICAL STATE: The material is a solid white powder when mixed, and a solid white powder and dark blue powder when unmixed.

CHEMICAL & PHYSICAL PROPERTIES

Molecular Weight:	Not applicable: this material is not a pure substance.
pH:	Not applicable: this material is insoluble.
BP/BP Range:	~361C at 760 mmHg
MP/MP Range:	~69C
Freezing Point:	Not applicable: this material is a solid in the form of a powder.
Vapor Pressure:	1mm at 173.7C
Vapor Density:	N/A
Saturation Vapor Conc.:	N/A
Density:	<1 (Water = 1)
Bulk Density:	~4 lb/gal
Odor Threshold:	N/A
Volatile%:	None

VOC Content:	None
Water Content:	None
Solvent Content:	None
Evaporation Rate:	N/A
Viscosity:	N/A
Surface Tension:	N/A
Partition Coefficient:	N/A
Decomposition Temp.	N/A
Flash Point:	113C, (closed-cup method)
Explosion Limits:	N/A
Flammability:	N/A
Autoignition Temp:	395C
Refractive Index;	N/A
Optical Rotation:	N/A
Miscellaneous Data:	N/A
Solubility:	Insoluble

SECTION 10 - STABILITY AND REACTIVITY

STABILITY

STABLE: Stable.

MATERIALS TO AVOID: Strong Bases, Oxidizing agents, Reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, Carbon dioxide, & NO_x

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

ROUTE OF EXPOSURE

SKIN CONTACT: This material will probably not cause skin irritation.

SKIN ABSORPTION: N/A

EYE CONTACT: Causes transient eye irritation, due to mechanical abrasion.

INHALATION: Material may be irritating to mucous membranes and upper respiratory tract.

INGESTION: May cause abdominal discomfort, nausea, and diarrhea.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

TOXICITY DATA

TOXICITY: This material is nontoxic. Remarks: Moderate irritation effect.

CHRONIC EXPOSURE – CARCINOGEN: To the best of our knowledge, this material is non-carcinogenic. NTP, IARC and OSHA do not list the components of this material as carcinogens.

SECTION 12 - ECOLOGICAL INFORMATION

This material presents no environmental hazards.

SECTION 13 - DISPOSAL CONSIDERATIONS

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION: This material can be disposed of by landfill or incineration with observance of all federal, state, and local environmental regulations.

SECTION 14 - TRANSPORT INFORMATION

DOT:

Proper Shipping Name: None

Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA:

Non-Hazardous for Air Transport: Non-hazardous for air transport.

SECTION 15 - REGULATORY INFORMATION



EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xi

Indication of Danger: Irritant.

R: 36/37/38

Risk Statements: Irritating to eyes.

S: 24/25

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice if irritation persists.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Irritant.

Risk Statements: Irritating to eyes.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice if irritation persists. Wear suitable protective clothing.



UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY ITEM: No



CANADA REGULATORY INFORMATION

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all the information required by the CPR.

SECTION 16 - OTHER INFORMATION**DISCLAIMER**

This product is for use in fire investigations only and to be used by trained and qualified individuals: It is not for drug, household, or other uses (see Section 3 – Hazards Identification).

WARRANTY: The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Ancarro shall not be held liable for any damage resulting from handling or from contact with this product. Copyright 2004 Ancarro License granted to make unlimited paper copies for internal use only.

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WARNING: Product dust particles in the atmosphere are combustible and present a potential explosion hazard. Keep away from heat, sparks, flame and all other ignition sources. Prevent dust accumulations and dust clouds. Keep container closed. Clean up dust accumulations. For proper safety of personnel and property, the container should be emptied in compliance with NFPA 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical, and Plastics Industries." Exercise caution when dispensing this product in or around combustible environments as the possible occurrence of a static discharge could ignite dust or vapors and cause a fire or explosion. Modification or use of the product in a way than enhances the dispersion of the particles in the atmosphere could significantly increase the potential of an explosion. All users of this product are urged to retain and use the MSDS. A MSDS is distributed upon purchase or request and is available at the Ancarro Website. You may request an advance or replacement copy by calling Ancarro at (888) 244-7472. ® IIA is a registered trademark of Ancarro, Inc.

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EMS CATALOG NO: 74300
EMS PRODUCT: Kodak Fixer
DATE: 07 Apr 2001
PAGE NUMBER: One of 10

MATERIAL SAFETY DATA SHEET

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

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(215) 646-1566

24 HOUR EMERGENCY PHONE NUMBER
CHEMTREC: (800) 424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT ELECTRON MICROSCOPY SCIENCES OFFICE ABOVE.

PRODUCT IDENTIFICATION

COMMON NAME: Kodak Fixer Powder
SYNONYM: Concentrate: KAN 354617; PCD 6010; D-0006.000
Working Solution: KAN 965822

COMPOSITION AND INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry No.)
Concentrate:
70-75 Sodium thiosulfate (007772-98-7)

- 10-15 Ammonium alum, dodecahydrate (~~007784-25-0~~)
- 5-10 Sodium acetate (~~000127-09-3~~)
- 5-10 Sodium metabisulfite (~~007681-57-4~~)
- 1-5 Boric anhydride (~~001303-86-2~~)

Working Solution:

- 70-80 Water (007732-18-5)
- 10-15 Sodium thiosulfate (007772-98-7)
- 1-5 Ammonium alum, dodecahydrate (007784-25-0)
- 1-5 Sodium acetate (000127-09-3)
- 1-5 Sodium bisulfite (007631-90-5)

HAZARDS IDENTIFICATION

Concentrate:

Contains: sodium metabisulfite (007681-57-4)

WARNING!

REDUCING AGENT

MAY BE HARMFUL IF INHALED OR SWALLOWED

MAY LIBERATE SULFUR DIOXIDE

DUST IRRITATING TO RESPIRATORY TRACT

CAUSES EYE IRRITATION

POWDERED MATERIAL MAY FORM EXPLOSIVE DUST-AIR MIXTURES

HMIS Hazard Ratings:

Health-2, Flammability-1, Reactivity-0, Personal Protection-B

NFPA Hazard Ratings:

Health-2, Flammability-1, Reactivity (Stability)-0

Working solution:

CONTAINS: sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF INHALED OR SWALLOWED

HMIS Hazard Ratings:

Health-0, Flammability-1, Reactivity-0, Personal Protection-B

NFPA Hazard Ratings:

Health-1, Flammability-1, Reactivity (Stability)-0

NOTE: HMIS and NFPA hazard indexes involve data review and interpretation that may vary among companies. They are intended only for rapid, general identification of the

magnitude of the potential hazards. The personal protection index is only intended for general guidance on personal protection equipment (PPE) that is suitable for the potential hazards of the material. PPE (e.g., respirators) may not be needed if engineering controls (e.g., local ventilation) are adequate. An asterisk (*), in the HMIS health field, designates potential chronic or target organ hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

FIRST-AID MEASURES

INHALATION: If symptomatic, move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

EYES:

Concentrate: Immediately flush with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Working Solution: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

SKIN: Wash with soap and water. Get medical attention if symptoms occur.

INGESTION: Drink 1-2 glasses of water. Seek medical attention. Never give anything by mouth to an unconscious person.

FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:

Concentrate: Flood with water.

Working Solution: Water spray, carbon dioxide (CO₂), dry chemical, alcohol foam.

SPECIAL FIRE-FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing. Fire or excessive heat may produce hazardous decomposition products.

HAZARDOUS COMBUSTION PRODUCTS:

Concentrate: Carbon dioxide, carbon monoxide, oxides of sulfur, oxides of nitrogen (see also Hazardous Decomposition Products section).

Working solution: Carbon dioxide, carbon monoxide, oxides of sulfur (see also Hazardous Decomposition Products section).

section)

UNUSUAL FIRE AND EXPLOSION HAZARDS:

~~Concentrate: Powdered material may form explosive dust-air mixtures. Reducing agent.~~ Greatly increases the burning rate of combustible materials.

Working solution: Flush to sewer with large amounts of water. Clean surface thoroughly to remove residual contamination.

HANDLING AND STORAGE

PERSONAL PRECAUTIONARY MEASURES: Avoid breathing dust or vapor.

Avoid contact with eyes and prolonged or repeated contact with skin. Use with adequate ventilation. Wash thoroughly after handling.

PREVENTION OF FIRE AND EXPLOSION:

~~Concentrate: Powdered material may form explosive dust-air mixtures. Minimize dust generation and accumulation.~~ Use with adequate ventilation. Keep away from sources of ignition. ~~Refer to NFPA Pamphlet No. 654, "Prevention of Fire and Dust Explosions in the Chemical, Dye Pharmaceutical, and Plastics Industries."~~ Keep from contact with oxidizing materials, highly oxygenated or halogenated solvents, organic compounds containing reducible functional groups, or aqueous ammonia. Keep away from combustible material. Remove and wash contaminated clothing promptly.

Working Solution: Keep from contact with oxidizing materials.

STORAGE:

Concentrate: Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section). Do not store or ship together with combustible materials. Store in original container.

Working solution: Keep container tightly closed. Keep away from incompatible substances (see Incompatibility section).

EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS:

ACGIH Threshold Limit Value (TLV):

Ammonium alum, dodecahydrate: 2mg/m³ TWA, as Al soluble salts

Boric anhydride: 10 mg/m³ TWA

Sodium metabisulfite: 5mg/m³ TWA

Sodium bisulfite: 5mg/m³ TWA

Sulfur dioxide: 2 ppm TWA; 5ppm STEL

OSHA (USA) Permissible Exposure Limit (PEL-1971 Table Z-1 Values):

Boric anhydride: 15mg/m³ TWA, total dust

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

RESPIRATORY PROTECTION:

Concentration: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn.

Respirator Type: Acid gas. See Stability and Reactivity Section. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

Working Solution: None should be needed. A respirator should be worn if hazardous decomposition products are likely to be or have been released.

Respirator type: Acid gas. See Stability and Reactivity Section. If respiratory are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

EYE PROTECTION: Wear safety glasses with side shields (or goggles).

SKIN PROTECTION: It is a good industrial hygiene practice to minimize skin contact. For operations where prolonged or repeated skin contact may occur, impervious gloves would be worn.

RECOMMENDED DECONTAMINATION FACILITIES: Eye bath, washing facilities, safety shower.

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM:

Concentrate: Solid (powder)

Working Solution: Liquid

COLOR:

Concentrate: White

Working Solution: Colorless

ODOR: Odorless

SPECIFIC GRAVITY (water=1):

Concentrate: Not available.

Working Solution: >1.00

VAPOR PRESSURE at 20°C (68°F):

Concentrate: Negligible

Working Solution: 24 mbar (18 mm Hg)

VAPOR DENSITY (AIR=1):

Concentrate: Not applicable.

Working solution: 0.6

VOLATILE FRACTION BY WEIGHT:

Concentrate: Negligible

Working Solution: 80-85%

BOILING POINT:

Concentrate: Not applicable

Working solution: >100°C (>212°F)

MELTING POINT:

Concentrate: Not available

Working solution: Not applicable

SOLUBILITY IN WATER:

Concentrate: Appreciable

Working solution: Complete

pH:

Concentrate: Not applicable

Working solution: 4.2-4.6

FLASH POINT:

Concentrate: Not applicable, combustible solid

Working solution: None

STABILITY AND REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY:

Concentrate: Strong oxidizing agent, strong acids, bases, sodium hypochlorite (bleach), combustible material, halogenated materials, aqueous ammonia.

Working Solution: Strong oxidizing agents, strong acids, bases, sodium hypochlorite (bleach).

HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, chloramine
HAZARDOUS POLYMERIZATION: Will not occur.

TOXICOLOGICAL INFORMATION

EFFECTS OF EXPOSURE:

INHALATION:

Concentrate: May cause irritation of the mucous membranes and upper respiratory tract. May be harmful if inhaled. In contact with strong acids or if heated, sulfites may liberate sulfur dioxide gas. Sulfur dioxide gas is irritating to the respiratory tract. Some asthmatics or hypersensitive individuals may experience difficult breathing.

EYES:

Concentrate: Causes irritation.

Working Solution: Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

SKIN:

This material has a low potential to cause allergic skin reactions; however, cases of human skin sensitization have been reported.

INGESTION:

Concentrate: May be harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness, weakness and diarrhea. May cause irritation of the gastrointestinal tract if swallowed.

Working solution: May be harmful if swallowed. Some asthmatics or sulfite-sensitive individuals may experience wheezing, chest tightness, stomach upset, hives, faintness,

weakness and diarrhea.

ECOLOGICAL INFORMATION

INTRODUCTION: This environmental effects summary is written to assist in addressing emergencies created by an accidental spill which might occur during the shipment of this material, and, in general, it is not meant to address discharges to sanitary sewers or publicly owned treatment works.

SUMMARY: Data for the major components of this material have been used to estimate the environmental impact of this material. This material forms a moderately acidic aqueous solution, and this property may cause adverse environmental effects. However, this material, itself, has not been tested for environmental effects.

It is expected to have the following properties: a moderate biochemical oxygen demand and may cause oxygen depletion in aqueous systems, a low potential to effect aquatic organisms, a low potential to affect secondary waste treatment microbial metabolism, a low potential to affect the germination and/or early growth of some plants, a low potential to persist in the environment, a low potential to bioconcentrate. After dilution with a large amount of water, followed by secondary waste treatment, this material is not expected to cause adverse environmental effects.

DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Flush to sewer with large amounts of water.

Concentrate: Since emptied containers retain product residue, follow label warnings even after container is emptied.

TRANSPORT INFORMATION

For transportation information regarding this product call the Kodak Worldwide Transportation Hazmat Hot Line: (716) 722-2400 between 8 am and 5 PM (Eastern Standard Time), Monday through Friday.

REGULATORY INFORMATION

- Material(s) known to the State of California to cause cancer: NONE
- Material(s) known to the State of California to cause adverse reproductive effects: NONE

CARCINOGENICITY CLASSIFICATION (COMPONENTS PRESENT AT 0.1% OR MORE):

- International Agency for Research on Cancer (IARC): None
 - American Conference of Governmental Industrial Hygienists (ACGIH):
None
 - National Toxicology Program (NTP): None
 - Occupational Safety and Health Administration (OSHA): None

 - Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372:
None
-

OTHER INFORMATION

US/CANADIAN LABEL STATEMENTS:

Concentrate:

Contains: Sodium metabisulfite (007681-57-4)

WARNING!

REDUCING AGENT

MAY BE HARMFUL IF INHALED OR SWALLOWED

MAY LIBERATE SULFUR DIOXIDE

DUST IRRITATING TO RESPIRATORY TRACT

CAUSES EYE IRRITATION

Keep container tightly closed.

Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly.

Avoid breathing dust.

Avoid contact with eyes and prolonged or repeated contact with skin.

Wash with adequate ventilation.

Wash thoroughly after handling.

Additional hazard precautions for containers greater

than 1 gallon of liquid or 5 pounds of solid:

Since emptied containers retain product residue, follow label warnings even after container is emptied.

Working Solution:

CONTAINS: Sodium bisulfite (007631-90-5)

WARNING!

MAY BE HARMFUL IF INHALED OR SWALLOWED

Avoid contact with eyes and prolonged or repeated contact with skin.

Avoid breathing mist or vapor.

Use with adequate ventilation.

Wash thoroughly after handling.

FIRST AID: If swallowed, seek medical advice. Never give anything by mouth to an unconscious person.

Keep out of reach of children.

Additional hazard precautions for containers greater than 1 gallon of liquid or 5 pounds of solid:

IN CASE OF FIRE: Use water spray, carbon dioxide (CO₂), dry chemical, alcohol foam.

Georgia Gulf Sulfur Corporation[Home](#) | [Products](#) | [Safety](#) | [Sulfur](#) | [Affiliates](#)

Material Safety Data Sheet

Rubbermaker's and Industrial Sulfur

GEORGIA GULF SULFUR CORPORATION**Office:**

PO Box 1165, Valdosta Georgia 31603 -1165
phone (229) 244-0000
fax (229) 245-1664

Plant:

PO Box 67, Bainbridge Georgia 39818
phone (229) 246-4552
fax (229) 246-3245

EMERGENCY ASSISTANCE:

CHEMTREC (800) 424-9300 (24 Hours)

SECTION 1 CHEMICAL IDENTITY

Trade Name & Synonyms: Sulphur, Pulverized Sulfur, Rubbermaker's Sulfur, Commercial Sulfur

Chemical Name: Sulfur

Family Name: Element - Sulfur

Chemical Formula: S₈

Appearance: Odorless, tasteless, pale yellow powder or solid

CAS Number: 7704-34-9

Hazardous Ingredient: Sulfur

% by Weight: 97.5% Min.

SECTION 2 PHYSICAL DATA

Appearance: Yellow colored lumps, crystals, powder, or formed shape

Odor: Odorless, or faint odor of rotten eggs

Purity: 97.5% Min.

Formula: S₈ (Rhombic or monoclinic)

Vapor Pressure: 0mmHG at 280°F

Solubility In Water: Insoluble

Specific Gravity: 2.07 @ 70°F

Boiling Point: 832°F (444°C)

Freezing/Melting Point: 230-246°F (110-119°C)

Bulk Density: Lumps 75-115 lbs./ft³ Powder 33-80 lbs./ft³

SECTION 3 FIRE AND EXPLOSION DATA

Flashpoint: 405°F (207.2°C)

Explosive Limits of Dust in Air: LEL 35 g/m³ UEL 1400 g/m³

Auto-ignition Temperature: 478-511°F (248-266°C)

Extinguishing Media: Water fog, spray, or regular foam. Do not use a direct water stream.

Burning Sulfur decomposes into TOXIC sulfur oxide gasses such as:

Sulfur dioxide (SO₂) and Hydrogen sulfide (H₂S).

PRIMARY HAZARD:

Sulfur dust suspended in air ignites easily, and can cause an explosion in confined areas. May be ignited by friction, static electricity, heat, sparks, or flames. Toxic gases will form upon combustion. Bulk/solid forms burn only at moderate rate, whereas dust burns with explosive violence.

FIRE: 

Wear full-faced, self-contained breathing apparatus and full protective clothing. Use a water fog to extinguish fire. Do not use solid streams of water, which could create sulfur dust clouds and cause an explosion or move burning sulfur to adjacent areas. Fire will rekindle until mass is cooled below 310 °F (154°C). Cool surrounding areas with water fog to prevent re-igniting. Cool containers, tank cars, or trailer loads with flooding quantities of water until well after fire is out. Evacuate nonessential personnel from the fire area. If large fire, evacuate people downwind from fire. Isolate for ½ mile in all directions, consider evacuation for ½ mile in all directions. Prevent human exposure to smoke, fumes, or products of combustion (sulfur oxide gases). Firemen exposed to contaminated smoke should be immediately relieved and checked for symptoms of exposure to toxic gasses. *Seek medical attention immediately!* This should not be mistaken for heat exhaustion or smoke inhalation. These are extremely irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon exposure.

HAZARD RATING

0 = Least 1 = Slight 2 = Moderate
3 = High 4 = Extreme

ACUTE HEALTH = 1

FIRE = 1

REACTIVITY = 0

CONTACT = 1

SECTION 4 REACTIVITY DATA

Stability: Stable

Conditions to Avoid (Instability): Keep from heat sources, sparks, and open flames.

Materials to Avoid (Incompatibility): Oxidizing agents, may react violently. Corrosive to copper and copper alloys. Damp sulfur will corrode steel.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Oxides of sulfur gasses produced by burning sulfur.

SECTION 5 HEALTH HAZARDS

Sulfur is essentially non-toxic either through ingestion, inhalation, skin or eye contact.

Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Nose or throat irritation, coughing, chest discomfort, asthma, difficulty breathing, nausea, vomiting, stinging eye irritation, skin irritation, hives.

EMERGENCY AND FIRST AID:**SKIN CONTACT:**

No adverse effects. Skin irritation may be aggravated in persons with existing skin lesions.

Wash exposed clothing separately before reuse. *First Aid:* Wash skin with plenty of mild soap and water.

EYE CONTACT:

Sulfur dust is an eye irritant. Avoid contact with eyes, especially contact wearers. Wear safety

glasses. **First Aid:** In case of contact, immediately flush eyes with plenty of water for a minimum of fifteen minutes. Hold upper and lower lids apart to insure rinsing of the entire eye surface and lids. Do not use boric acid to rinse with; sulfur is an acid irritant. **FOR SEVERE IRRITATION, GET MEDICAL ATTENTION, preferably an ophthalmologist.**

INHALATION:

Prolonged inhalation may cause irritation of the respiratory tract. Breathing of dust may aggravate asthma and other pulmonary diseases. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur dust. Maintain adequate ventilation in area where dust is present. Wear dust masks and use NIOSH/MSHA approved dust respirator if airborne concentrations exceed exposure limits. **First Aid:** Move patient to fresh air. Watch for signs of allergic reaction. Use a bronchodilator inhaler if directed by asthma patient. Keep victim warm and quiet. If not breathing, clear airway and start mouth-to-mouth resuscitation. If heart has stopped beating, start cardiopulmonary resuscitation (CPR). **GET MEDICAL ATTENTION.**

INGESTION:

Ingested sulfur is converted to sulfides in the gastrointestinal tract, and ingestion of 10 to 20 grams has caused irritation of the GI tract and renal injury. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur. Swallowing large amounts may cause nausea and vomiting. Do not eat sulfur. **First Aid:** For large amounts ingested, if the victim is conscious and alert, give two or more glasses of water to drink. If available, give one tablespoon of Syrup of Ipecac to induce vomiting. If vomiting does occur, give fluids again. If vomiting has not occurred in twenty minutes, the same dose of Syrup of Ipecac may be repeated one additional time. Alternatively, vomiting may be induced by touching the back of the throat with a finger. Do not give anything by mouth to an unconscious or convulsing person. **GET MEDICAL ATTENTION.**

EXPOSURE LIMITS:

No exposure limits have been established.

TOXICOLOGY:

Oral LD₅₀ (Rats): >5050 mg/kg body weight

Dermal LD₅₀ (Rats): >2020 mg/kg body weight

Inhalation @ 90% LC₅₀ (Rats): >5.49 mg/L air concentration

Skin Effects (Rabbits): Slightly irritating

Eye Effects (Rabbits): Minimal irritation in non-washed eyes

CARCINOGENICITY, TERATOGENICITY, MUTAGENICITY:

This product does not contain any ingredient designated by NTP, IARC, or OSHA as a probable human carcinogen.

SECTION 6 PRECAUTIONS FOR SAFE HANDLING AND USE**STORAGE:**

Containers should be stored in a cool, dry, well ventilated area. Keep container tightly closed. Store away from flammable materials, sources of heat, flame and sparks. Separate from chlorates, nitrates and other oxidizing agents. Exercise due caution to prevent damage to or leakage from container.

EXPLOSION HAZARD:

Avoid any conditions that might tend to create a dust explosion. Be careful not to create dust. Maintain good housekeeping practices to minimize dust build-up and dispersion. Eliminate sources of ignition. Keep away from heat, sparks and flames. Use nonferrous tools to reduce sparking. Sweep or shovel up spilled material using a natural fiber broom and/or aluminum shovel to prevent sparking. Maintain adequate ventilation in all areas.

SMALL or LARGE SPILLS:

No flares or flames in area. No smoking. ~~Danger of dust explosion near sparks.~~ Sweep or shovel up spilled material using a natural fiber broom and/or aluminum shovel to prevent sparking. Place sweepings in an appropriate chemical waste container for reclaiming or disposal in an approved facility. Wash spill site after clean up is complete. Wear protective clothing during clean up: safety glasses, rubber gloves, impervious clothing, dust mask or respirator.

SECTION 7 PROTECTIVE EQUIPMENT

WORK AREA:

Protective equipment should be used during the following procedures:

- Manufacture or formulation of this product.
- Repair and maintenance of contaminated equipment.
- Clean up of leaks and spills.
- Any situation which may result in hazardous exposure.

Maintain adequate ventilation and wear a respirator or a dust mask to prevent inhalation. Wear suitable, protective clothing and safety glasses to prevent skin and eye irritation from dust. Maintain a sink, safety shower and eyewash fountain in the work area. Wash skin thoroughly after handling and before eating or smoking. Wash contaminated clothing separately before reuse.

SECTION 8 DOT AND REGULATORY INFORMATION

TSCA:

This product is listed on the TSCA Inventory at CAS Registry Number 7704-34-9.

CERCLA:

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). If this product is accidentally spilled, it is not subject to any special reporting. We recommend that you contact state and local authorities to determine if there are other local reporting requirements.

SARA TITLE III:

Superfund Amendments and Reauthorization Act, Title III, Sections 311/312: None. Section 313: None. Section 302: None.

RCRA:

Resource Conservation and Recovery Act: not subject to reporting because sulfur is not identified as a hazardous waste.

SHIPPING CLASSIFICATION:

Solid sulfur is not subject to the requirements of Title 49 CFR Hazardous Materials Shipping Guidelines or the IMDG Code if transported in a non-bulk packaging (less than 400 kg per package) or is formed to a specific shape (e.g., prills, granules, pellets, pastilles, or flakes).

DOT DOMESTIC: Bulk Packaging

Shipping Name: Sulfur
Hazard Class: 9 (Misc. Hazardous materials)
ID Number: NA1350
Packing Group: III
Label: Class 9
Placard: None Required
Hazardous Substance/Rq: Not Applicable

DOT INTERNATIONAL: Bulk Packaging

Shipping Name: Sulfur
Hazard Class: 4.1 (Flammable Solid)
ID Number: UN1350
Packing Group: III
Label: Flammable Solid
Placard: Class 4 (Flammable Solid)
Hazardous Substance/Rq: Not Applicable


This product is not a Marine Pollutant as defined in 40 CFR part 172.

FOR ADDITIONAL INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE. FOR ADDITIONAL HEALTH & SAFETY INFORMATION, CALL GEORGIA GULF SULFUR CORPORATION AT 229-244-0000.

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