

**Department of Energy**

Office of Civilian Radioactive Waste Management
1551 Hillshire Drive
Las Vegas, NV 89134-6321

QA: N/A

FEB 23 2007

RECEIVED BY BSC CCU

DATE: 06/06/2007

OVERNIGHT MAIL

Ms. Virginia A. Capucci
Office of the State Fire Marshal
State of Nevada
Stewart Facility
107 Jacobsen Way
Carson City, NV 89711

Subject: 2007 State Fire Marshal Nevada Combined Agency Hazardous Material Facility Reports for Company Number 1403, Facility Numbers 2796, 54188, 54189, 54659, 55555, 55683, 55927, and 55942

Dear Ms. Capucci:

Enclosed are the calendar year 2007 Nevada Combined Agency Hazardous Material Facility Reports for the U.S. Department of Energy's (DOE), Yucca Mountain Project facilities.

We understand that as the federal government, the DOE is exempt from filing any fees this year.

If you have any questions or require additional information, please contact Marian J. Crawford of my office at (702) 794-5585, or Howell M. Estes of Bechtel SAIC Company, LLC, at (702) 821-7880.

Sincerely,

A handwritten signature in black ink, appearing to read "R. E. Spence".

Richard E. Spence, Program Manager
Environment, Safety, Health and Security
Yucca Mountain Site Operations Office

Enclosures:
As stated

Ms. Virginia A. Capucci

-2-

FEB 23 2007

bcc w/encls:

S. A. Wade, DOE (RW-8) NV
P. L. Baiocchetti, BSC, Las Vegas, NV
H. M. Estes, BSC, Las Vegas, NV
K. B. McGlothlin, BSC, Las Vegas, NV
J. B. Pergerson, BSC, Las Vegas, NV
W. A. Sinclair, BSC, Mercury, NV, M/S 720
Records Processing center = "202"

bcc w/o encls:

A. B. Benson, DOE (RW-14) NV
CMS Coordinator, BSC, Las Vegas, NV
A. G. Secord, BSC, Las Vegas, NV
YMSOO Records Coordinator, NV

MFR: YMSOO:MJC-0649

ATS: YD-200700481

7027

PROCESSED
JUN 7 2007
BSC CCU/Lmm

NEVADA STATE FIRE MARSHAL
HAZARDOUS MATERIALS PERMITS
107 Jacobsen Way
Carson City, Nevada 89711
(775) 684-7524 * FAX (775) 684-7518

HAZMAT PERMIT RENEWAL INVOICE

SCOTT A WADE
YUCCA MOUNTAIN PROJECT
1551 HILLSHIRE DRIVE
LAS VEGAS NV 89134-6321

Company #: 1403

Enclosed are the year 2007 permit renewal forms. Payment and forms are due March 1st. Please do not alter any of the information above. Changes should be noted on pages 2a & 2b of this package. **PAGES 2a & 2b MUST ALWAYS BE RETURNED, EVEN IF YOU HAVE NO CHANGES.**

This invoice reflects applicable SARA Title III fees, plus \$150 for the State Fire Marshal Hazardous Materials Storage Permit. Page three (3) of this package is a list of your reported chemical data. The fee schedule is based on this information. If you have changes in chemicals or tonnage, adjust your fees accordingly. No person/company shall pay more than \$7500 for SARA Title III fees, regardless of the number of facilities located in Nevada.

State Fire Marshal Hazardous Materials Storage Permit Fee:	\$	0.00
SARA Title III TPQ Registration Fee:		0.00
SARA Title III Tons in Storage Fee:		0.00
Manufacture of EHS for Transport Filing Fee:		0.00
Manufacture of EHS for Transport Tonnage Fee:		0.00

TOTAL: \$ 0.00

FOR 2007 WITH \$7500 CAP, YOU PAY THIS AMOUNT: \$ 0.00

PREVIOUS BALANCE: \$ 0.00

TOTAL DUE FOR 2007: \$

Make check payable to . Remit payment with forms to address above. Reference your Company Rec. No. on your check and all correspondence. If you need assistance, call (775) 684-7524.

If you are not renewing, provide a written explanation why and return forms.

REMEMBER: Provide a copy of this year's report to your Local Fire Department and Local Emergency Planning Committee (see page 9).

AMOUNT PAID: \$

STATE FIRE MARSHAL
107 Jacobsen Way, Carson City, NV 89711

NEVADA COMBINED AGENCY HAZMAT FACILITY REPORT

- FIRE MARSHAL HAZARDOUS MATERIALS STORAGE PERMIT
- SARA III, TIER II HIGHLY HAZARDOUS SUBSTANCES MANUFACTURE FOR TRANSPORT

ALWAYS COMPLETE AND SIGN THIS PAGE

MAIL/BILLING COMPANY NAME: YUCCA MOUNTAIN PROJECT

PARENT COMPANY NAME: _____

ADDRESS FOR MAILING/BILLING: Check here if same as Facility Physical address

STREET: 1551 HILLSHIRE DRIVE CITY: LAS VEGAS

STATE: NV ZIP: 89134-6321 ATTENTION: SCOTT A WADE

PARENT COMPANY ADDRESS: Not applicable

STREET: _____ CITY: _____

STATE: _____ ZIP: _____ ATTENTION: _____

E-MAIL: _____

PHONE #: _____ PHONE TYPE *: _____

PARENT COMPANY CONTACT NAME: _____

EMERGENCY PHONE #: _____ PHONE TYPE *: _____

I CERTIFY THAT THIS SUBMITTAL IS TRUE AND CORRECT.

Scott A. Wade
NAME OF OWNER/MANAGER (PLEASE PRINT)

Acting Director, Yucca Mountain Site
Operations Office

[Signature]
SIGNATURE

TITLE

2/23/07
DATE

*Phone Types: Work, Mobile, Cell, Pager, Home

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT

COUNTY: NYE LOCAL FIRE DEPT: NYE COUNTY MERCURY TEST SITE VFD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:

9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #:

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: FIELD OPS CTR AREA 25

CITY: MERCURY STATE: NV ZIP: 89023

E-MAIL:

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOC DUTY OFFICER TITLE: SAME

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

2 - NAME: SCOTT WADE TITLE: ~~FAC OPS DIR~~
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

*Phone Types: Work, Mobile, Cell, Pager, Home

CHEMICAL LIST AS PROVIDED FROM LAST YEAR'S REPORT

Please pay close attention to the CAS Numbers listed below. The CAS numbers are found on the Material Safety Data Sheets (MSDS) provided by the chemical supplier. If no CAS number exists for the Substance in question, please move it to the Non Cas Chem page (7). **VERIFY** the CAS numbers listed in the first column. **FILL** in the blanks if the CAS# is missing. To **CHANGE** the quantity stored for a chemical, write the current amount under the "MAX QTY THIS YEAR" column. To **DELETE** a chemical place an "X" under the "REMOVE CHEM" column. To **ADD** a new chemical, complete page 6. (Nevada Chemical Information Sheet)

CAS #	CHEMICAL NAME	COMMON NAME	MAX QTY LAST YR	MAX QTY THIS YEAR	EHS/OSHA CHEM	REMOVE CHEM
74-86-2	ACETYLENE	ACETYLENE	7773 CFT	3842		
7782-44-7	OXYGEN	COMPRESSED OXYGEN	18704 CFT	13799		
7727-37-9	NITROGEN	COMPRESSED NITROGEN	7963 CFT	2329		
8006-61-9	PETROLEUM HYDROCARBON MIXT	GASOLINE	62169 LBS	62719	0	
7647-01-0	HYDROCHLORIC ACID	HYDROCHLORIC ACID	4 LBS	104		
67-64-1	ACETONE	ACETONE	27 LBS	33		
67-63-0	ISOPROPYL ALCOHOL	ISOPROPYL ALCOHOL	66 LBS	128		
7664-93-9	SULFURIC ACID	SULFURIC ACID	14239 LBS	13156	E	
65997-15-1	PORTLAND CEMENT	CEMENT	9870 LBS	340912		
107-21-1	ETHYLENE GLYCOL	ANTIFREEZE	4778 LBS	4909		
8006-20-6	KEROSENE	KEROSENE	6764 LBS	4073		
74-98-6	PROPANE	PROPANE	5121 LBS	8978		
1310-73-2	SODIUM HYDROXIDE	SODIUM HYDROXIDE	32 LBS			X
68476-34-6	PETROLEUM HYDROCARBON MIXT	DIESEL FUEL #2	30796 LBS	79297	0	
7697-37-2	NITRIC ACID	NITRIC ACID	5 LBS			X
8052-41-3	STODDARD SOLVENT	EXTERIOR OIL PRIMER #2110	1425 LBS			X
8052-41-3	STODDARD SOLVENT	EXTERIOR OIL PAINT #2516	506 LBS			X
75-71-8	DICHLORODIFLUOROMETHANE (CI	R12	145 LBS			X
811-97-2	TETRAFLUOROETHANE	HFC-134A	90 LBS			X
630-08-0	CARBON MONOXIDE	CARBON MONOXIDE	108 CFT			X
84-17-5	ETHANOL	DP-LUBRICANT BLUE	35 LBS			
64742-88-7	ALIPHATIC PETROLEUM SOLVENT	MINERAL SPIRITS	254 LBS	355		
7727-37-9	NITROGEN	BREATHING AIR GRADE D	24841 CFT	23249		
8008-20-6	JET FUEL	AVIATION TURBINE FUEL	600 GAL			
112-34-5	ALKALI	CHEMGUARD G2	1000 GAL			
67-56-1	METHYL ALCOHOL	CLEAR PERFORMANCE WWF	32 GAL			X
1569-01-3	N-PROPOXYPROPANOL	HI-EX 2%	30 GAL			
64742-34-3	NAPHTHENIL BASEOUL	PETROLEUM	40000 LBS			
1310-58-3	POTASSIUM HYDROXIDE	BATTERY ELECTROLYTE	139 GAL			
64742-88-7	ALIPHATIC PETROLEUM SOLVENT	SBS ADHESIVE	360 GAL	25		
14808-60-7	SILICA	HUB NON-SHRINK GROUT	50000 LBS			X

CHEMICAL LIST AS PROVIDED FROM LAST YEAR'S REPORT

Please pay close attention to the CAS Numbers listed below. The CAS numbers are found on the Material Safety Data Sheets (MSDS) provided by the chemical supplier. If no CAS number exists for the Substance in question, please move it to the Non Cas Chem page (7). **VERIFY** the CAS numbers listed in the first column. **FILL** in the blanks if the CAS# is missing. To **CHANGE** the quantity stored for a chemical, write the current amount under the "MAX QTY THIS YEAR" column. To **DELETE** a chemical place an "X" under the "REMOVE CHEM" column. To **ADD** a new chemical, complete page 6. (Nevada Chemical Information Sheet)

CAS #	CHEMICAL NAME	COMMON NAME	MAX QTY LAST YR	MAX QTY THIS YEAR	EHS/OSHA CHEM	REMOVE CHEM
95-63-6	TRIMETHYL BENZENE	SPARTAN COTE	150 GAL			X
67-56-1	METHANOL	YELLOW TRAFFIC PAINT 6053	28540 LBS		0	X
64742-88-7	ALIPHATIC PETROLEUM SOLVENT	PETROLEUM	220 GAL			X
7439-92-1	LEAD	LEAD	65626 LBS	64216	0	
14808-60-7	SILICA	MONOLITE STUCCO	150 LBS			X
303-00-0	USED OIL	WASTE OIL	9805 LBS	2575 GAL		
303-00-0	USED OIL	WASTE OIL	817 LBS			X
303-00-0	USED OIL	WASTE OIL	2043 LBS			X
1333-74-0	HYDROGEN	HYDROGEN	902 CFT			
7778-54-3	CALCIUM HYPOCHLORITE	LESLIE'S POWER POWDER	485 LBS	375		
67-63-0	ISOPROPYL ALCOHOL	GEL INSTANT HAND SANITIZER	14 GAL	17		
64-17-5	ETHYL ALCOHOL	SPRA-FECT DISINFECTANT	9 GAL			
1330-20-7	XYLENE	14E SERIES QUIXNAMEL	40 GAL			X
67-63-0	ISOPROPYL ALCOHOL	UNIVERSAL INDICATOR SOLUTION	20 GAL			X
68476-34-6	PETROLEUM HYDROCARBON MIXT	DIRM/WASTE DIESEL FUEL NO. 2	55 GAL	110		
14808-60-7	SILICA	QUIKRETE 5000	168600 LBS			X
14808-60-7	SILICA	SILICA SAND	2400 LBS	10000		
14808-60-7	SILICA	VERSABOND THINSET	50 LBS			X
14808-60-7	SILICA	TYPE K CEMENT	1568 LBS			X
14808-60-7	SILICA	ATIAPULGITE CLAY	1750 LBS			X
14808-60-7	SILICA	MEYCO RBA GROUT	2500 LBS			X
14808-60-7	SILICA	TYPE S HYDRATED LIME PUTTY	2700 LBS			X
109-99-9	TETRAHYDROFURAN	LA-4123 PVC SEAM ADHESIVE	16 GAL			
8052-41-3	STODDARD SOLVENT	ENAMEL TOPCOAT (346440Z)	36 GAL			X
7320-34-5	DREW 2100	A-33 LIQUID DETERGENT	150 GAL	30		
15875-25-9	BORANE-10B TRIFLUORO	BORANE-10B TRIFLUORO	18 CC			

STATE FIRE MARSHAL NEVADA CHEMICAL INFORMATION SHEET

1 CAS NUMBER <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-around;"> 1302 789 </div>	2 CHEMICAL NAME BENTONITE	3 COMMON NAME	4 CHEMICAL CONTENT <input checked="" type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input type="checkbox"/> ACUTE OR IMMEDIATE <input checked="" type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>97200 LBS</u> AVERAGE QTY/TYPE ON SITE <u>97200 LBS</u>	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">J</div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">4</div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">1</div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION <u>NORTH ROSSAL PAD; EXILE HILL; GATE 510; YUCCA MOUNTAIN CREST</u> NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u> CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				

1 CAS NUMBER <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-around;"> </div>	2 CHEMICAL NAME	3 COMMON NAME	4 CHEMICAL CONTENT <input type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE _____ AVERAGE QTY/TYPE ON SITE _____	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION _____ NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: _____ CHECK IF CONFIDENTIAL STORAGE SITE <input type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				

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HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: HOLEPLUG® 3/8

Revision Date: 02/25/2002

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Not classified as hazardous according to criteria of WorkSafe

Manufacturer/Supplier Halliburton/Baroid Australia Pty. Ltd.
 53-55 Bannister Road
 Canning Vale
 WA 6155
 Australia
 ACN Number: 000 708 510
 Telephone Number: (08) 9455 8300
 Emergency Telephone Number: 1800 039 008
 Fax Number: (08) 9455 5300

Identification of Substances or Preparation

Product Trade Name: HOLEPLUG® 3/8
 Synonyms: None
 Chemical Family: Mineral
 Dangerous Goods Class: None
 Subsidiary Risk: None
 Hazchem Code: None
 Poisons Schedule: None
 Application: Weight Additive

Prepared By Product Stewardship
 Telephone: 1-580-251-4335

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE	CAS Number	PERCENT	Australia NOHSC	ACGIH TLV-TWA
Bentonite	1302-78-9	60 - 100%	Not determined	Not applicable
Crystalline silica, quartz	14808-60-7	0 - 5%	Not determined	0.05 mg/m ³
Crystalline silica, cristobalite	14464-46-1	0 - 1%	Not determined	0.05 mg/m ³
Crystalline silica, tridymite	15468-32-3	0 - 1%	Not determined	0.05 mg/m ³

Total to 100%

3. HAZARDS IDENTIFICATION

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Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD
May cause eye and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD
Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Hazard Ratings

Flammability: 0
Toxicity: 0
Body Contact: 0
Reactivity: 0
Chronic: 4

Scale: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Wash with soap and water. Get medical attention if irritation persists.

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Under normal conditions, first aid procedures are not required.

Notes to Physician Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media
Unsuitable Extinguishing Media None known.
Special Exposure Hazards Not applicable.
Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.
Environmental Precautionary Measures None known.
Procedure for Cleaning/Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

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7. HANDLING AND STORAGE

Handling Precautions This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.

Respiratory Protection Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product.

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Various
Odor:	Odorless
pH:	8-10
Specific Gravity @ 20 C (Water=1):	2.12
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits In Air - Lower (g/l):	Not Determined
Flammability Limits In Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/l):	Not Determined
Flammability Limits In Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility In Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

Decomposition Temperature (C):

Not Determined

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10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Hydrofluoric acid.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	<p>Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).</p> <p>Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).</p>
Skin Contact	May cause mechanical skin irritation.
Eye Contact	May cause eye irritation.
Ingestion	None known
Aggravated Medical Conditions	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Other Information For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	Not determined
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Shipping Information

EPG: Not determined
IERG: Not determined
Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory Not Determined
US TSCA Inventory All components listed on inventory.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Crystalline silica is not classified as a carcinogen in EU Council Directives 67/548/EEC and 88/379/EEC.

Risk Phrases None

Safety Phrases None

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

Contact

Australian Poisons Information Centre
24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand Poisons Information System
Deunedin: -(03) 479 1200 (Normal Hours)
-(03) 474 0999 (Emergency)

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Product Stewardship at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

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HALLIBURTON

HMI 05-058

MATERIAL SAFETY DATA SHEET

Product Trade Name: **BENSEAL®**

Revision Date: 08/23/2002

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Not classified as hazardous according to criteria of WorkSafe

Manufacturer/Supplier Halliburton/Baroid Australia Pty. Ltd.
 53-55 Bannister Road
 Canning Vale
 WA 6155
 Australia
 ACN Number: 000 708 510
 Telephone Number: (08) 9455 8300
 Emergency Telephone Number: 1800 039 008
 Fax Number: (08) 9455 5300

Identification of Substances or Preparation

Product Trade Name: **BENSEAL®**
 Synonyms: None
 Chemical Family: Mineral
 Dangerous Goods Class: None
 Subsidiary Risk: None
 Hazchem Code: None
 Poisons Schedule: None
 Application: Viscosifier

Prepared By Product Stewardship
 Telephone: 1-580-251-4335

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE	CAS Number	PERCENT	Australia NOHSC	ACGIH TLV-TWA
Bentonite	1302-78-9	60 - 100%	Not determined	Not applicable
Crystalline silica, quartz	14808-60-7	1 - 5%	Not determined	0.05 mg/m ³
Crystalline silica, cristobalite	14464-46-1	0 - 1%	Not determined	0.05 mg/m ³
Crystalline silica, tridymite	15468-32-3	0 - 1%	Not determined	0.05 mg/m ³

Total to 100%

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD
May cause eye and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD
Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

Hazard Ratings

Flammability: 0
Toxicity: 0
Body Contact: 0
Reactivity: 0
Chronic: 4

Scale: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin Wash with soap and water. Get medical attention if irritation persists.
Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Ingestion Under normal conditions, first aid procedures are not required.
Notes to Physician Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media All standard fire fighting media
Unsuitable Extinguishing Media None known.
Special Exposure Hazards Not applicable.
Special Protective Equipment for Fire-Fighters Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.
Environmental Precautionary Measures None known.
Procedure for Cleaning/Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Product has a shelf life of 60 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.

Respiratory Protection Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product.

Hand Protection Normal work gloves.

Skin Protection Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

Eye Protection Wear safety glasses or goggles to protect against exposure.

Other Precautions None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Various
Odor:	Mild earthy
pH:	8-10 (5% sol.)
Specific Gravity @ 20 C (Water=1):	2.6
Density @ 20 C (kg/l):	Not Determined
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/l):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/l):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined

Molecular Weight (g/mole):
Decomposition Temperature (C):

Not Determined
Not Determined

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10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Hydrofluoric acid.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	<p>Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).</p> <p>Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).</p>
Skin Contact	May cause mechanical skin irritation.
Eye Contact	May cause eye irritation.
Ingestion	None known
Aggravated Medical Conditions	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68. Silica. Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Other Information For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155; pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Refer to <u>IARC Monograph 68. Silica. Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	TLM96: 10000 ppm (Oncorhynchus mykiss)
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined
Chemical Fate Information	Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Shipping Information

EPG: Not determined
IERG: Not determined
Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory Not Determined
US TSCA Inventory All components listed on inventory.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Crystalline silica is not classified as a carcinogen in EU Council Directives 67/548/EEC and 88/379/EEC.

Risk Phrases

Safety Phrases

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

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Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26
Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand Poisons Information System

Deunedin: -(03) 479 1200 (Normal Hours)
-(03) 474 0999 (Emergency)

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Product Stewardship at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

END OF MSDS

HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: **QUIK-GEL®**

Revision Date: 10-Jun-2005

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: QUIK-GEL®

Synonyms: None

Chemical Family: Mineral

Application: Viscosifier

Manufacturer/Supplier: Baroid Drilling Fluids
a Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Compliance
Telephone: 1-580-251-4335

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Crystalline silica, cristobalite	14464-46-1	0 - 1%	0.025 mg/m ³	1/2 x 10 mg/m ³ %SiO ₂ + 2
Crystalline silica, tridymite	15468-32-3	0 - 1%	0.05 mg/m ³	1/2 x 10 mg/m ³ %SiO ₂ + 2
Crystalline silica, quartz	14808-60-7	1 - 5%	0.025 mg/m ³	10 mg/m ³ %SiO ₂ + 2
Bentonite	1302-78-9	60 - 100%	Not applicable	Not applicable

More restrictive exposure limits may be enforced by some states, agencies, or other authorities.

3. HAZARDS IDENTIFICATION

3. HAZARDS IDENTIFICATION

Hazard Overview

CAUTION! - ACUTE HEALTH HAZARD
May cause eye and respiratory irritation.

DANGER! - CHRONIC HEALTH HAZARD

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Ingestion	Under normal conditions, first aid procedures are not required.
Notes to Physician	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media All standard firefighting media.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

NFPA Ratings: Health 0, Flammability 0, Reactivity 0
HMIS Ratings: Flammability 0, Reactivity 0, Health 0*

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

7. HANDLING AND STORAGE

Handling Precautions	This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.
Storage Information	Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Keep from excessive heat. Do not reuse empty container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.
Respiratory Protection	Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product.
Hand Protection	Normal work gloves.
Skin Protection	Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Powder
Color:	Various
Odor:	Mild earthy
pH:	8-10
Specific Gravity @ 20 C (Water=1):	2.6
Density @ 20 C (lbs./gallon):	Not Determined
Bulk Density @ 20 C (lbs/ft3):	47.6-72.1
Boiling Point/Range (F):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (F):	Not Determined
Freezing Point/Range (C):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Slightly soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	Not Determined
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Hydrofluoric acid.
Hazardous Decomposition Products	Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	<p>Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).</p> <p>Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).</p>
Skin Contact	May cause mechanical skin irritation.
Eye Contact	May cause eye irritation.
Ingestion	None known
Aggravated Medical Conditions	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

Chronic Effects/Carcinogenicity Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

Other Information

For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity:	Not determined
Dermal Toxicity:	Not determined
Inhalation Toxicity:	Not determined
Primary Irritation Effect:	Not determined
Carcinogenicity	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
Genotoxicity:	Not determined
Reproductive / Developmental Toxicity:	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not Determined

Ecotoxicological Information

Acute Fish Toxicity:	TLM96: 10000 ppm (Oncorhynchus mykiss)
Acute Crustaceans Toxicity:	Not determined
Acute Algae Toxicity:	Not determined

Chemical Fate Information Not determined
Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

DOT
Not restricted

Canadian TDG
Not restricted

ADR Not restricted

Air Transportation

ICAO/IATA Not restricted

Sea Transportation

IMDG Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

US TSCA Inventory All components listed on inventory.

EPA SARA Title III Extremely
Hazardous Substances Not applicable

EPA SARA (311,312) Hazard
Class Acute Health Hazard
 Chronic Health Hazard

EPA SARA (313) Chemicals This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).

EPA CERCLA/Superfund
Reportable Spill Quantity For This
Product Not applicable.

EPA RCRA Hazardous Waste
Classification If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

California Proposition 65 The California Proposition 65 regulations apply to this product.

MA Right-to-Know Law	One or more components listed.
NJ Right-to-Know Law	One or more components listed.
PA Right-to-Know Law	One or more components listed.
Canadian Regulations	
Canadian DSL Inventory	All components listed on inventory.
WHMIS Hazard Class	D2A Very Toxic Materials Crystalline silica

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

Additional Information For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

STATE FIRE MARSHAL NEVADA CHEMICAL INFORMATION SHEET

1 CAS NUMBER <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> 7440 37 1 </div>	2 CHEMICAL NAME ARGON	3 COMMON NAME	4 CHEMICAL CONTENT <input type="checkbox"/> Mixture <input checked="" type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input checked="" type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input checked="" type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input checked="" type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>300 CFT</u> AVERAGE QTY/TYPE ON SITE <u>300 CFT</u>	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">L</div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">4</div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">2</div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u>			DESCRIBE LOCATION <u>NORTH PORTAL PAD SURFACE STORAGE YARD</u>	
CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>			CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/>	
14 MANUFACTURING FOR TRANSPORT INFORMATION: AVERAGE AMOUNT MFG FOR TRANSPORT _____			<input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____	

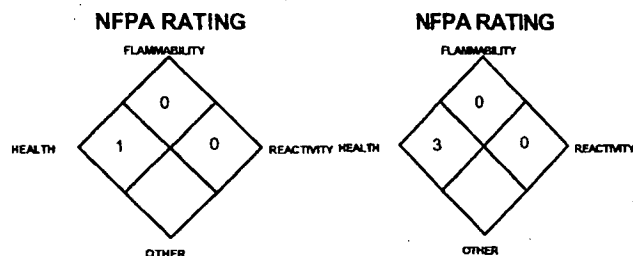
1 CAS NUMBER <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> 7440 59 7 </div>	2 CHEMICAL NAME HELIUM	3 COMMON NAME	4 CHEMICAL CONTENT <input type="checkbox"/> Mixture <input checked="" type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input checked="" type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input checked="" type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input checked="" type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>650 CFT</u> AVERAGE QTY/TYPE ON SITE <u>650 CFT</u>	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">L</div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">4</div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; padding: 2px; text-align: center;">2</div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u>			DESCRIBE LOCATION <u>NORTH PORTAL PAD SURFACE STORAGE YARD</u>	
CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>			CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/>	
14 MANUFACTURING FOR TRANSPORT INFORMATION: AVERAGE AMOUNT MFG FOR TRANSPORT _____			<input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____	

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

ARGON GAS

LIQUID ARGON



PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:

ARGON - Ar
LIQUEFIED ARGON - Ar, (Cryogenic)
 Document Number: 001004

PRODUCT USE:

For general analytical/synthetic chemical uses.

SUPPLIER/MANUFACTURER'S NAME:

AIRGAS INC.

ADDRESS:

259 N. Radnor-Chester Road
 Suite 100
 Radnor, PA 19087-5283

BUSINESS PHONE:

1-610-687-5253

EMERGENCY PHONE:

1-800-949-7937

International: 423-479-0293 (Call Collect)

DATE OF PREPARATION:

May 12, 1996

REVISION DATE:

January 2, 2002

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA		IDLH ppm	OTHER
			TLV ppm	STEL ppm	PEL ppm	STEL ppm		
Argon	7440-37-1	>99%	There are no specific exposure limits for Argon. Argon is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Maximum Impurities		<1%	None of the trace impurities in this mixture contribute significantly to the hazards associated with the product. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and State equivalent standards.					

NE = Not Established.

C = Ceiling Limit.



See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.



3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Argon is a colorless, odorless, non-flammable gas or a colorless, odorless, cryogenic liquid. The cryogenic liquid will rapidly boil to the gas at standard temperatures and pressures. The liquefied gas can cause frostbite to any contaminated tissue. The main health hazard associated with releases of this gas is asphyxiation, by displacement of oxygen.

ARGON GAS

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	1
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT		B	
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

LIQUID ARGON

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT		X	
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

See Section 16 for Definition of Ratings

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant route of overexposure for this gas is by inhalation. The following paragraphs describe symptoms of exposure by route of exposure.

INHALATION: High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim may have a blue color. Under some circumstances, death may occur. The effects associated with various levels of oxygen are as follows:

CONCENTRATION

12-16% Oxygen:
10-14% Oxygen:
6-10% Oxygen:
Below 6%:

SYMPTOMS OF EXPOSURE

Breathing and pulse rate increased, muscular coordination slightly disturbed.
Emotional upset, abnormal fatigue, disturbed respiration.
Nausea and vomiting, collapse or loss of consciousness.
Convulsive movements, possible respiratory collapse, and death.

OTHER POTENTIAL HEALTH EFFECTS: Contact with cryogenic liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Overexposure to Argon may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, and nausea. At high concentrations, unconsciousness or death may occur. Contact with cryogenic liquid or rapidly expanding gases may cause frostbite.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to Argon.

TARGET ORGANS: Respiratory system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO ARGON WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.

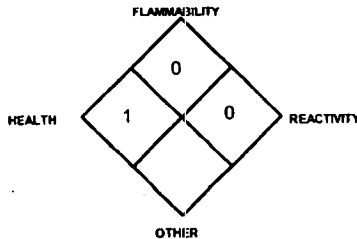
Remove victim(s) to fresh air as quickly as possible. In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Only trained personnel should administer supplemental oxygen.

In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

5. FIRE-FIGHTING MEASURES

ARGON GAS NFPA RATING



See Section 16 for Definition of Ratings

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

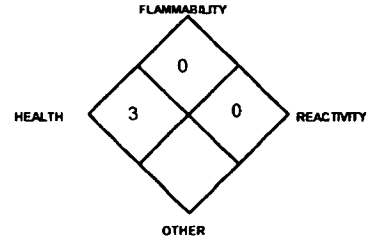
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Non-flammable, inert gas. Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Argon

does not burn; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

LIQUID ARGON NFPA RATING



RESPONSE TO FIRE INVOLVING CRYOGEN: Cryogenic liquids can be particularly dangerous during fires because of their potential to rapidly freeze water. Careless use of water may cause heavy icing. Furthermore, relatively warm water greatly increases the evaporation rate of Argon. If large concentrations of Argon gas are present, the water vapor in the surrounding air will condense, creating a dense fog that makes it difficult to find fire exits or equipment. Liquid Argon, when exposed to the atmosphere, will produce a cloud of ice/fog in the air upon its release.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders if it can be done without risk to firefighters. Otherwise, cool containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to the fire.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area and protect people. Minimum Personal Protective Equipment should be Level B: protective clothing, gloves resistant to tears, and Self-Contained Breathing Apparatus.

6. ACCIDENTAL RELEASE MEASURES (Continued)

SPILL AND LEAK RESPONSE (continued): Allow the gas, which is heavier than air, to dissipate. Monitor the surrounding area for oxygen levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

RESPONSE TO CRYOGENIC RELEASE: Clear the affected area and allow the liquid to evaporate and the gas to dissipate. After the gas is formed, follow the instructions provided in the previous paragraph. If the area must be entered by emergency personnel, SCBA, Kevlar gloves, and appropriate foot and leg protection must be worn.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting Argon IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of Argon could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors, or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Use only storage containers and equipment (pipes, valves, fittings to relieve pressure, etc.) designed for the storage of Liquid Argon. Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting.

Keep Dewar flasks covered with loose-fitting cap. This prevents air or moisture from entering the container, yet allows pressure to escape. Use only the stopper or plug supplied with the container. Ensure that ice does not form in the neck of flasks. If the neck of Dewar flask is blocked by ice or "frozen" air, follow manufacturer's instruction for removing it. Ice can also cause pressure release valves to fail. Never tamper with pressure relief devices in valves and cylinders. The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand truck. Do not drag, slide, or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in place (where provided) until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap (where provided). Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code containers. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. For cryogenic liquids, refer to CGA P-12, *Safe Handling of Cryogenic Liquids*. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas (e.g., Nitrogen) before attempting repairs.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to maintain oxygen level above 19.5% in the work area. Local exhaust ventilation is preferred, because it prevents Argon dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION: Maintain oxygen level above 19.5% in the workplace. Use supplied air respiratory protection if oxygen level is below 19.5% or during emergency response to a release of Argon. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.

EYE PROTECTION: Splash goggles, face shields, or safety glasses. Face shields must be worn when using cryogenic Argon.

HAND PROTECTION: Wear gloves resistant to tears when handling cylinders of Argon. Use low-temperature protective gloves when working with containers of Liquid Argon.

BODY PROTECTION: Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to protect employees from splashes of liquefied product, as well as to provide sufficient insulation from extreme cold.

9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY: 1.650 kg/m³ (0.103 lb/ft³)

SPECIFIC GRAVITY (air = 1): 1.380

SOLUBILITY IN WATER v/v @ 20 °C (68°F): 3.37%

VAPOR PRESSURE: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Log P = 0.94.

SPECIFIC VOLUME (ft³/lb): 9.7

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING POINT: -189.2°C (-308.9°F)

BOILING POINT (@ 1 atm.): -185.9°C (-302.6°F)

ODOR THRESHOLD: Not applicable.

pH: Not applicable.

EXPANSION RATIO: 841 (cryogenic liquid)

APPEARANCE AND COLOR: Argon is a colorless, odorless gas or a colorless, odorless, cryogenic liquid.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of Argon. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY and REACTIVITY

STABILITY: Normally stable, inert gas.

DECOMPOSITION PRODUCTS: None.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: None. Argon is an inert gas.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposing cylinders to extremely high temperatures, which could cause the cylinders to rupture or burst.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following data are for Argon:

Standard animal toxicity values are not available. Male rats were exposed for 6 days to 20% oxygen and 80% Argon at 1 atmosphere ambient pressure. No significant changes in blood cell counts or bone marrow were observed. Other animal studies concern the deficiency of (hypoxia) or the narcotic effects of various pressures of Argon, the effects of increased Argon pressures on the central nervous system and decompression sickness.

Eyes: Argon gas injected into the anterior (front) chamber of the eyes of rabbits caused no injury and was reabsorbed at about the same rate as air.

SUSPECTED CANCER AGENT: Argon is not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Argon is not an irritant. However, contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.

SENSITIZATION OF PRODUCT: Argon is not a sensitizer after prolonged or repeated exposures.

11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Argon on the human reproductive system.

Mutagenicity: Argon is not expected to cause mutagenic effects in humans.

Embryotoxicity: Argon is not expected to cause embryotoxic effects in humans.

Teratogenicity: Argon is not expected to cause teratogenic effects in humans.

Reproductive Toxicity: Argon is not expected to cause adverse reproductive effects in humans.

*A **mutagen** is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An **embryotoxin** is a chemical which causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance which interferes in any way with the reproductive process.*

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by overexposure to Argon.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for this compound.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: Argon occurs naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Any adverse effect on animals would be related to oxygen-deficient environments. No adverse effect is anticipated to occur to plant life, except for frost produced in the presence of rapidly expanding gases.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on Argon's effects on aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, and local regulations. Return cylinders with residual product to Airgas. Do not dispose of locally.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Argon Gas: Argon, compressed	Argon Liquid: Argon, refrigerated liquid
HAZARD CLASS NUMBER and DESCRIPTION:	2.2 (Non-Flammable Gas)	2.2 (Non-Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1006	UN 1951
PACKING GROUP:	Not applicable.	Not applicable.
DOT LABEL(S) REQUIRED:	Non-Flammable Gas	Non-Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 121 (Gas); 120 (Liquid)

MARINE POLLUTANT: Argon is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: Argon is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

15. REGULATORY INFORMATION (Continued)

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDSL INVENTORY STATUS: Argon is on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: Argon is on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Argon is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Argon.

California - Permissible Exposure Limits for Chemical Contaminants: Argon.

Florida - Substance List: Argon.

Illinois - Toxic Substance List: Argon.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Argon.

Michigan - Critical Materials Register: No.

Minnesota - List of Hazardous Substances: Argon.

Missouri - Employer Information/Toxic Substance List: Argon.

New Jersey - Right to Know Hazardous Substance List: Argon.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: Argon.

Rhode Island - Hazardous Substance List: Argon.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Argon is not on the California Proposition 65 lists.

LABELING:

COMPRESSED GAS:

CAUTION:

HIGH PRESSURE GAS.

CAN CAUSE RAPID SUFFOCATION.

Store and use with adequate ventilation.

Use equipment rated for cylinder pressure.

Close valve after each use and when empty.

Use in accordance with the Material Safety Data Sheet.

FIRST-AID:

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

DO NOT REMOVE THIS PRODUCT LABEL.

CRYOGENIC LIQUID:

ALWAYS KEEP CONTAINER IN UPRIGHT POSITION.

WARNING:

EXTREMELY COLD LIQUID AND GAS UNDER PRESSURE.

CAN CAUSE RAPID SUFFOCATION.

CAN CAUSE SEVERE FROSTBITE.

Store and use with adequate ventilation.

Do not get liquid in eyes, on skin or clothing.

For liquid withdrawal, wear face shield and gloves.

Do not drop. Use hand truck for container movement.

Close valve after each use and when empty.

Use in accordance with the Material Safety Data Sheet.

FIRST-AID:

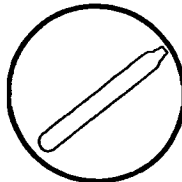
IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

IN CASE OF FROSTBITE, obtain medical treatment immediately.

DO NOT REMOVE THIS PRODUCT LABEL.

CANADIAN WHMIS SYMBOLS:

Class A: Compressed Gases



16. OTHER INFORMATION

PREPARED BY:

Airgas - SAFECOR

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. AIRGAS, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AIRGAS, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The **DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). **NIOSH** issues exposure guidelines called Recommended Exposure Levels (**RELs**). When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury).

NATIONAL FIRE PROTECTION ASSOCIATION (Continued): Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

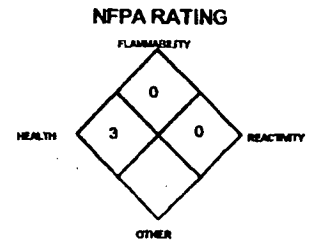
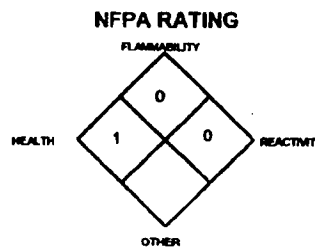
Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. **IARC** and **NTP** rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TD₀₁**, **LDLo**, and **LD₀₁**, or **TC**, **TC₀₁**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: **EC** is the effect concentration in water.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations.

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards



PART I What is the material and what do I need to know in an emergency?

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:

HELIUM - He
LIQUEFIED HELIUM - He, (Cryogenic)
Document Number: 001025

PRODUCT USE:

For general analytical/synthetic chemical uses.

SUPPLIER/MANUFACTURER'S NAME:

AIRGAS INC.

ADDRESS:

259 N. Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283

BUSINESS PHONE:

1-610-687-5253

EMERGENCY PHONE:

1-800-949-7937

International: 423-479-0293 (Call Collect)

DATE OF PREPARATION:

May 12, 1996

REVISION DATE:

August 22, 2001

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA		IDLH ppm	OTHER
			TLV ppm	STEL ppm	PEL ppm	STEL ppm		
Helium	7440-59-7	>99	There are no specific exposure limits for Helium. Helium is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Maximum Impurities		< 1	None of the trace impurities in this mixture contribute significantly to the hazards associated with the product. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and State equivalent standards.					

NE = Not Established.

C = Ceiling Limit.



See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.



3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Helium is a colorless, odorless, non-flammable gas or a colorless, odorless, cryogenic liquid. The cryogenic liquid will rapidly boil to the gas at standard temperatures and pressures. The liquefied gas can cause frostbite to any contaminated tissue. The main health hazard associated with releases of this gas is asphyxiation by displacement of oxygen.

HELIUM GAS

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	1
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT		B	
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

LIQUID HELIUM

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT		X	
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

See Section 16 for Definition of Ratings

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant route of overexposure for this gas is by inhalation. The following paragraphs describe symptoms of exposure by route of exposure.

INHALATION: High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim may have a blue color. Under some circumstances, death may occur. The effects associated with various levels of oxygen are as follows:

CONCENTRATION

12-16% Oxygen:
10-14% Oxygen:
6-10% Oxygen:
Below 6%:

SYMPTOMS OF EXPOSURE

Breathing and pulse rate increased, muscular coordination slightly disturbed.
Emotional upset, abnormal fatigue, disturbed respiration.
Nausea and vomiting, collapse or loss of consciousness.
Convulsive movements, possible respiratory collapse, and death.

OTHER POTENTIAL HEALTH EFFECTS: Contact with cryogenic liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Overexposure to Helium may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, and nausea. At high concentrations, unconsciousness or death may occur. Contact with cryogenic liquid or rapidly expanding gases may cause frostbite.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to Helium.

TARGET ORGANS: Respiratory system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO HELIUM WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.

Remove victim(s) to fresh air as quickly as possible. In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Only trained personnel should administer supplemental oxygen.

In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available, or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

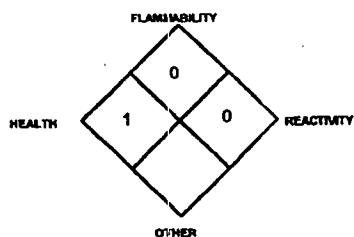
Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

5. FIRE-FIGHTING MEASURES

See Section 16 for Definition of Ratings

HELIUM GAS

NFPA RATING



FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Non-flammable, inert gas. Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Helium

does not burn; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

RESPONSE TO FIRE INVOLVING CRYOGEN: Cryogenic liquids can be particularly dangerous during fires because of their potential to rapidly freeze water. Careless use of water may cause heavy icing. Furthermore, relatively warm water greatly increases the evaporation rate of Helium. If large concentrations of Helium gas are present, the water vapor in the surrounding air will condense, creating a dense fog that makes it difficult to find fire exits or equipment. Liquid Helium, when exposed to the atmosphere, will produce a cloud of ice/fog in the air upon its release.

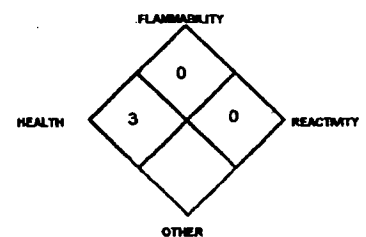
Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders if it can be done without risk to firefighters. Otherwise, cool containers with hose stream and protect personnel. Withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to the fire.

LIQUID HELIUM

NFPA RATING



6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area and protect people. Minimum Personal Protective Equipment should be Level B: protective clothing, gloves resistant to tears, and Self-Contained Breathing Apparatus.

6. ACCIDENTAL RELEASE MEASURES (Continued)

SPILL AND LEAK RESPONSE (continued): Allow the gas, which is lighter than air, to dissipate. Monitor the surrounding area for oxygen levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in place or remove it to a safe area and allow the gas to be released there.

RESPONSE TO CRYOGENIC RELEASE: Clear the affected area and allow the liquid to evaporate and the gas to dissipate. After the gas is formed, follow the instructions provided in the previous paragraph. If the area must be entered by emergency personnel, SCBA, Kevlar gloves, and appropriate foot and leg protection must be worn.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting Helium IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of Helium could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors, or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Use only storage containers and equipment (pipes, valves, fittings to relieve pressure, etc.) designed for the storage of Liquid Helium. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting.

Keep Dewar flasks covered with loose-fitting cap. This prevents air or moisture from entering the container, yet allows pressure to escape. Use only the stopper or plug supplied with the container. Ensure that ice does not form in the neck of flasks. If the neck of the Dewar flask is blocked by ice or "frozen" air, follow manufacturer's instruction for removing it. Ice can also cause pressure release valves to fail. Never tamper with pressure relief devices in valves and cylinders. The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand truck. Do not drag, slide, or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in place (where provided) until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap (where provided). Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code containers. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. For cryogenic liquids, refer to CGA P-12, *Safe Handling of Cryogenic Liquids*. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas (e.g., Nitrogen) before attempting repairs.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to maintain oxygen level above 19.5% in the work area. Local exhaust ventilation is preferred, because it prevents Helium dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION: Maintain oxygen level above 19.5% in the workplace. Use supplied air respiratory protection if oxygen level is below 19.5% or during emergency response to a release of Helium. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.

EYE PROTECTION: Splash goggles, face shields, or safety glasses. Face shields must be worn when using cryogenic Helium.

HAND PROTECTION: Wear gloves resistant to tears when handling cylinders of Helium. Use low-temperature protective gloves when working with containers of Liquid Helium.

BODY PROTECTION: Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to protect employees from splashes of liquefied product, as well as to provide sufficient insulation from extreme cold.

9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY @ 21.1°C (70°F): 0.165 kg/m³ (0.0103 lb/ft³)

SPECIFIC GRAVITY (air = 1): 0.1381

SOLUBILITY IN WATER v/v @ 0°C (32°F): 0.0094

VAPOR PRESSURE: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

SPECIFIC VOLUME (ft³/lb): 96.7

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING POINT: Not applicable.

BOILING POINT (@ 1 atm.): -268.9°C (-452.1°F)

ODOR THRESHOLD: Not applicable.

pH: Not applicable.

EXPANSION RATIO: 754 (cryogenic liquid)

APPEARANCE AND COLOR: Helium is a colorless, odorless gas or a colorless, odorless, cryogenic liquid.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of Helium. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY and REACTIVITY

STABILITY: Normally stable, inert gas.

DECOMPOSITION PRODUCTS: None.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: None. Helium is an inert gas.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposing cylinders to extremely high temperatures, which could cause the cylinders to rupture or burst.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Currently, there are no specific toxicology data for Helium. Helium is a simple asphyxiant, which acts to displace oxygen in the environment.

SUSPECTED CANCER AGENT: Helium is not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Helium is not an irritant. However, contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.

SENSITIZATION OF PRODUCT: Helium is not a sensitizer after prolonged or repeated exposures.

11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Helium on the human reproductive system.

Mutagenicity: Helium is not expected to cause mutagenic effects in humans.

Embryotoxicity: Helium is not expected to cause embryotoxic effects in humans.

Teratogenicity: Helium is not expected to cause teratogenic effects in humans.

Reproductive Toxicity: Helium is not expected to cause adverse reproductive effects in humans.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An *embryotoxin* is a chemical which causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A *teratogen* is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by overexposure to Helium.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for this compound.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: Helium occurs naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Any adverse effect on animals would be related to oxygen-deficient environments. No adverse effect is anticipated to occur to plant life, except for frost produced in the presence of rapidly expanding gases.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on Helium's effects on aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, and local regulations. Return cylinders with residual product to Airgas. Do not dispose of locally.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Helium Gas: Helium, compressed	Helium Liquid: Helium, refrigerated liquid
HAZARD CLASS NUMBER and DESCRIPTION:	2.2 (Non-Flammable Gas)	2.2 (Non-Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1046	UN 1963
PACKING GROUP:	Not applicable.	Not applicable.
DOT LABEL(S) REQUIRED:	Non-Flammable Gas	Non-Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 121 (Gas); 120 (Liquid)

MARINE POLLUTANT: Helium is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: Helium is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

15. REGULATORY INFORMATION (Continued)

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDL INVENTORY STATUS: Helium is on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: Helium is on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Helium is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Helium.

California - Permissible Exposure Limits for Chemical Contaminants: Helium.

Florida - Substance List: Helium.

Illinois - Toxic Substance List: Helium.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Helium.

Michigan - Critical Materials Register: No.

Minnesota - List of Hazardous Substances: Helium.

Missouri - Employer Information/Toxic Substance List: Helium.

New Jersey - Right to Know Hazardous Substance List: Helium.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: Helium.

Rhode Island - Hazardous Substance List: Helium.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Helium is not on the California Proposition 65 lists.

LABELING:

COMPRESSED GAS:

CAUTION:

HIGH PRESSURE GAS.

CAN CAUSE RAPID SUFFOCATION.

Store and use with adequate ventilation.

Use equipment rated for cylinder pressure.

Close valve after each use and when empty.

Use in accordance with the Material Safety Data Sheet.

FIRST-AID:

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

DO NOT REMOVE THIS PRODUCT LABEL.

CRYOGENIC LIQUID:

ALWAYS KEEP CONTAINER IN UPRIGHT POSITION.

WARNING:

EXTREMELY COLD LIQUID AND GAS UNDER PRESSURE.

CAN CAUSE RAPID SUFFOCATION.

CAN CAUSE SEVERE FROSTBITE.

Store and use with adequate ventilation.

Do not get liquid in eyes, on skin or clothing.

For liquid withdrawal, wear face shield and gloves.

Do not drop. Use hand truck for container movement.

Close valve after each use and when empty.

Use in accordance with the Material Safety Data Sheet.

FIRST-AID:

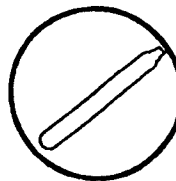
IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

IN CASE OF FROSTBITE, obtain medical treatment immediately.

DO NOT REMOVE THIS PRODUCT LABEL.

CANADIAN WHMIS SYMBOLS:

Class A: Compressed Gases



16. OTHER INFORMATION

PREPARED BY:

Airgas - SAFECOR

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. AIRGAS, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AIRGAS, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The **DFG** - MAK is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury).

NATIONAL FIRE PROTECTION ASSOCIATION (Continued): Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m³ concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. **IARC** and **NTP** rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom; and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: **EC** is the effect concentration in water.

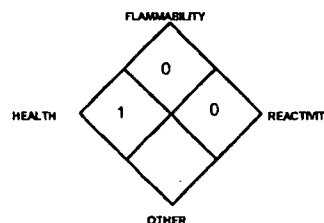
REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDSL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations.

**STATE FIRE MARSHAL
NEVADA CHEMICAL INFORMATION SHEET**

1 CAS NUMBER [][][][][][] [][][][] [][][][][][] [][][][]	2 CHEMICAL NAME Helium	3 COMMON NAME Helium 75% ARGON 25%	4 CHEMICAL CONTENT <input checked="" type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input checked="" type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input checked="" type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input checked="" type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>400 CFT</u> AVERAGE QTY/TYPE ON SITE <u>400 CFT</u>	10 CONTAINER TYPE ENTER CODE [L]	11 TEMPERATURE ENTER CODE [4]	12 PRESSURE ENTER CODE [2]	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION <u>NORTH PORTAL PAD SURFACE STORAGE YARD</u> NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u> CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				

1 CAS NUMBER [][][][][][] [][][][] [][][][][][] [][][][]	2 CHEMICAL NAME CARBON DIOXIDE	3 COMMON NAME CARBON DIOXIDE 36% ARGON 64%	4 CHEMICAL CONTENT <input checked="" type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input checked="" type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input checked="" type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input checked="" type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>3000 CFT</u> AVERAGE QTY/TYPE ON SITE <u>3000 CFT</u>	10 CONTAINER TYPE ENTER CODE [L]	11 TEMPERATURE ENTER CODE [4]	12 PRESSURE ENTER CODE [2]	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION <u>NORTH PORTAL PAD SURFACE STORAGE YARD</u> NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u> CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:

**NON-FLAMMABLE GAS MIXTURE
HELIUM: 23-100%; ARGON: Balance
GOLD GAS™ SHIELDING GASES**

TRADE NAME/SYNONYMS:

**ALUMMIX™: Helium: 30%; Argon: Balance
He-25™: Helium: 25%; Argon: Balance
He-35™: Helium: 35%; Argon: Balance
He-50™: Helium: 50%; Argon: Balance
He-75™: Helium: 75%; Argon: Balance
He-90™: Helium: 90%; Argon: Balance**

PRODUCT USE:

Document Number: 002002
Analytical/synthetic chemical use.

SUPPLIER/MANUFACTURER'S NAME:

AIRGAS INC.

ADDRESS:

259 N. Radnor-Chester Road.
Suite 100
Radnor, PA 19087-5283

BUSINESS PHONE:

1-610-687-5253

EMERGENCY PHONE:

CHEMTREC: 1-800-424-9300

International: 703-527-3887 (Call Collect)

DATE OF PREPARATION:

September 5, 1996

FIRST REVISION:

January 23, 1998

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA		IDLH ppm	OTHER
			TLV ppm	STEL ppm	PEL ppm	STEL ppm		
Helium	7440-59-7	23-100	There are no specific exposure limits for Helium. Helium is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Argon	7440-37-1	Balance	There are no specific exposure limits for Argon. Argon is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

NE = Not Established

C = Ceiling Limit

See Section 16 for Definitions of Terms Used

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless, odorless, non-flammable gas. The main health hazard associated with releases of this gas is asphyxiation, by displacement of oxygen. These gas mixtures have an average molecular weight that is lighter than the average molecular weight of air. Emergency responders must wear proper personal protective equipment, including Self-Contained Breathing Apparatus, when responding to releases of this material.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant route of overexposure for this gas mixture is by inhalation. The following paragraphs describe symptoms of exposure by route of exposure.

INHALATION: High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim of overexposure may have a blue color. Under some circumstances of overexposure, death may occur. The effects associated with various levels of oxygen are as follows:

CONCENTRATION	SYMPTOMS OF EXPOSURE
12-16% Oxygen:	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea and vomiting, collapse or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.



OTHER POTENTIAL HEALTH EFFECTS: Contact with rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Overexposure to this gas mixture may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, ringing in ears, headaches, dizziness, indigestion, nausea, and, at high concentrations, unconsciousness or death may occur. Contact with rapidly expanding gases (which are released under high pressure) may cause frostbite.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to this product. Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may effect the heart and nervous system.

TARGET ORGANS: Respiratory system.

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	1
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT			B
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

See Section 16 for Definition of Ratings

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus Personal Protective equipment should be worn.

Remove victim(s) to fresh air, as quickly as possible. In case of eye contact which leads to irritation, immediately flush eyes with copious amounts of water for at least 15 minutes. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Only trained personnel should administer supplemental oxygen.

4. FIRST-AID MEASURES (Continued)

In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available, or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

5. FIRE-FIGHTING MEASURES

FLASH POINT, (method): Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

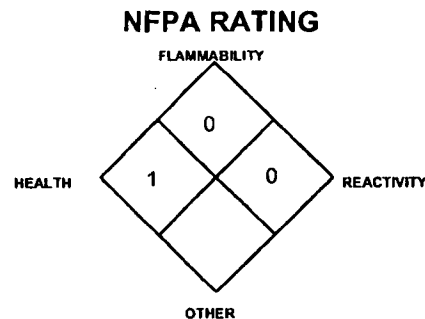
FIRE EXTINGUISHING MATERIALS: Non-flammable, inert gas. Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Although the mixture is non-flammable, it can present minor health hazards to firefighters. This gas mixture does not burn; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders from area, if it can be done without risk to firefighters. Withdraw immediately in case of rising sounds from venting safety devices or any discoloration of tanks or cylinders due to a fire.



See Section 16 for Definition of Ratings

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel.

Minimum Personal Protective Equipment should be **Level B: protective clothing, mechanically-resistant gloves and Self-Contained Breathing Apparatus**. Locate and seal the source of the leaking gas. Allow the gas, which is lighter than air, to dissipate. Monitor the surrounding area for oxygen levels. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over.

7. HANDLING and STORAGE (Continued)

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS (Continued): Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Never tamper with pressure relief devices in valves and cylinders. The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME Code containers. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Local exhaust ventilation is preferred, because it prevents dispersion of this gas mixture into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen.

RESPIRATORY PROTECTION: Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of this product. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent State standards.

EYE PROTECTION: Splash goggles, face-shields or safety glasses.

HAND PROTECTION: Wear mechanically-resistant gloves when handling cylinders of this product.

BODY PROTECTION: Use body protection appropriate for task.

9. PHYSICAL and CHEMICAL PROPERTIES

The following information is pertinent for Argon, a main component of this gas mixture.

VAPOR DENSITY: 1.650 kg/m³ (0.103 lb/ft³)

SPECIFIC GRAVITY (air = 1): 1.380

SOLUBILITY IN WATER v/v @ 20 °C (68°F): 3.37%

VAPOR PRESSURE: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Log P = 0.94.

SPECIFIC VOLUME (ft³/lb): 9.7

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING POINT: -189.2°C (-308.9°F)

BOILING POINT (@ 1 atm.): -185.9°C (-302.6°F)

ODOR THRESHOLD: Not applicable.

pH: Not applicable.

EXPANSION RATIO: 841 (cryogenic liquid)

The following information is pertinent for Helium, a main component of this gas mixture.

VAPOR DENSITY @ 21.1°C (70°F): 0.165 kg/m³ (0.0103 lb/ft³)

SPECIFIC GRAVITY (air = 1): 0.1381

SOLUBILITY IN WATER v/v @ 0°C (32°F): 0.0094

VAPOR PRESSURE: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

SPECIFIC VOLUME (ft³/lb): 96.7

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING POINT: Not applicable.

BOILING POINT (@ 1 atm.): -268.9°C (-452.1°F)

ODOR THRESHOLD: Not applicable.

pH: Not applicable.

EXPANSION RATIO: 754 (cryogenic liquid)

The following information is pertinent to this gas mixture.

AVERAGE MOLECULAR WEIGHT: These gas mixtures have an average molecular weight that is lighter than the average molecular weight of air.

APPEARANCE AND COLOR: This product is a colorless, odorless gas.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of this product.

10. STABILITY and REACTIVITY

STABILITY: Normally stable, inert gas.

DECOMPOSITION PRODUCTS: None.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: None. This product is a mixture of inert gases.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposing cylinders to extremely high temperatures, which could cause the cylinders to rupture or burst.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following data are for the components of this gas mixture.

Argon: Standard animal toxicity values are not available. Male rats were exposed for 6 days to 20% oxygen and 80% Argon at 1 atmosphere ambient pressure. No significant changes in blood cell counts or bone marrow were observed. Other animal studies concern the deficiency of (hypoxia) or the narcotic effects of various pressures of Argon, the effects of increased Argon pressures on the central nervous system and decompression sickness.

Eyes: Argon gas injected into the anterior (front) chamber of the eyes of rabbits caused no injury and was reabsorbed at about the same rate as air.

Helium: There are no specific toxicology data for Helium. Helium is a simple asphyxiant, which acts to displace oxygen in the environment.

SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore are not considered to be, nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.

SENSITIZATION OF PRODUCT: The components of this gas mixture are not known to be sensitizers upon prolonged or repeated exposure.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not expected to cause mutagenic effects in humans.

Embryotoxicity: This product is not expected to cause embryotoxic effects in humans.

Teratogenicity: This product is not expected to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not expected to cause adverse reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by overexposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

BIOLOGICAL EXPOSURE INDICES: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: The components of this gas mixture occur naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Any adverse effect on animals would be related to oxygen deficient environments. No adverse effect is anticipated to occur to plant-life, except for frost produced in the presence of rapidly expanding gases.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on the effect of this product on aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with residual product to Airgas Inc. Do not dispose of locally.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Rare gases mixtures, compressed (Argon, Helium)
HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)
UN IDENTIFICATION NUMBER: UN 1979
PACKING GROUP: Not Applicable
DOT LABEL(S) REQUIRED: Non-Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): 121

MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS GAS MIXTURE IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDL INVENTORY STATUS: The components of this gas mixture are on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: The components of this gas mixture are on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: The components of this gas mixture are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Argon, Helium.	Michigan - Critical Materials Register: No.	Pennsylvania - Hazardous Substance List: Argon, Helium.
California - Permissible Exposure Limits for Chemical Contaminants: Argon, Helium.	Minnesota - List of Hazardous Substances: Argon, Helium.	Rhode Island - Hazardous Substance List: Argon, Helium.
Florida - Substance List: Argon, Helium.	Missouri - Employer Information/Toxic Substance List: Argon, Helium.	Texas - Hazardous Substance List: No.
Illinois - Toxic Substance List: Argon, Helium.	New Jersey - Right to Know Hazardous Substance List: Argon, Helium.	West Virginia - Hazardous Substance List: No.
Kansas - Section 302/313 List: No.	North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.	Wisconsin - Toxic and Hazardous Substances: No.
Massachusetts - Substance List: Argon, Helium.		

15. REGULATORY INFORMATION (Continued)

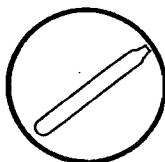
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The components of this gas mixture are not on the California Proposition 65 lists.

LABELING: (Precautionary Statements):

CAUTION: HIGH PRESSURE GAS.
CAN CAUSE RAPID SUFFOCATION.
Store and use with adequate ventilation.
Use equipment rated for cylinder pressure.
Close valve after each use and when empty.
Use in accordance with the Material Safety Data Sheet.

FIRST AID: IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
DO NOT REMOVE THIS PRODUCT LABEL.

CANADIAN WHMIS SYMBOLS: Class A: Compressed Gases



16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
619/565-0302

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. AIRGAS, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AIRGAS, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1999 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: **Health Hazard:** 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetime overexposure can be fatal). **Flammability Hazard:** 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). **Reactivity Hazard:** 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: **Health Hazard:** 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure causes death or major residual injury).

NATIONAL FIRE PROTECTION ASSOCIATION (Continued): **Flammability Hazard and Reactivity Hazard:** Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). **Flash Point** - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. **Autoignition Temperature:** The minimum temperature required to initiate combustion in air with no other source of ignition. **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. **IARC** and **NTP** rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TD₀₁**, **LDLo**, and **LD₀₁**, or **TC**, **TC₀₁**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological information: **EC** is the effect concentration in water.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations.

Nonflammable Gas Mixture: Argon 1-99% / Carbon Dioxide 0.5-99%

Section 1. Chemical product and company identification

Product Name : Nonflammable Gas Mixture: Argon 1-99% / Carbon Dioxide 0.5-99%

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

MSDS# : 002031

Date of Preparation/Revision : 5/12/2006.

In case of emergency : 1-866-734-3438

NOTE BY BSC Hazardous Material Coordinator:
Product ordered contains
64% Argon and 36% Carbon Dioxide.

Section 2. Hazards identification

Physical state : Gas.

Emergency overview : Warning!
CONTENTS UNDER PRESSURE.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
LUNGS, CARDIOVASCULAR SYSTEM, SKIN, CENTRAL NERVOUS SYSTEM, EYE,
LENS OR CORNEA.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
Avoid contact with skin and clothing. Avoid breathing gas. Do not puncture or incinerate container. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Contact with rapidly expanding gases can cause frostbite.

Routes of entry : Inhalation, Dermal, Eyes

Potential acute health effects

Eyes : Moderately irritating to the eyes.

Skin : Moderately irritating to the skin.

Inhalation : Moderately irritating to the respiratory system.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects : **CARCINOGENIC EFFECTS** Not available.
MUTAGENIC EFFECTS Not available.
TERATOGENIC EFFECTS Not available.

Medical conditions aggravated by overexposure : Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

<u>Name</u>	<u>CAS number</u>	<u>% Volume</u>	<u>Exposure limits</u>
Carbon Dioxide	124-38-9	0.5 - 99	ACGIH TLV (United States, 9/2004). STEL: 54000 mg/m ³ 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m ³ 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms NIOSH REL (United States, 6/2001). STEL: 54000 mg/m ³ 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms

TWA: 9000 mg/m³ 10 hour(s). Form: All forms

TWA: 5000 ppm 10 hour(s). Form: All forms

OSHA PEL (United States, 6/1993).

TWA: 9000 mg/m³ 8 hour(s). Form: All forms

TWA: 5000 ppm 8 hour(s). Form: All forms

Argon

7440-37-1 1 - 99

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

- Eye contact** : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire fighting measures

- Flammability of the product** : Non-flammable.
- Products of combustion** : These products are carbon oxides (CO, CO₂).
- Fire fighting media and instructions** : Use an extinguishing agent suitable for surrounding fires.

If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area.

No specific hazard.

- Special protective equipment for fire-fighters** : Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and storage

- Handling** : Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Do not puncture or incinerate container. Wash thoroughly after handling. High pressure gas. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : A self-contained breathing apparatus should be used to avoid inhalation of the product.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : Not applicable.

Molecular formula : Not applicable.

Boiling/condensation point : Not available.

Melting/freezing point : -189.2°C (-308.6°F) based on data for: argon.

Critical temperature : The lowest known value is -122.4°C (-188.3°F) (argon).

Vapor density : The highest known value is 1.53 (Air = 1) (Carbon Dioxide). Weighted average: 1.45 (Air = 1)

Specific Volume (ft³/lb) : Not applicable.

Gas Density (lb/ft³) : Weighted average: 0.11

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Not considered to be reactive according to our database.

Section 11. Toxicological information

Chronic effects on humans : Contains material which causes damage to the following organs: lungs, cardiovascular system, skin, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material for humans.

Specific effects:

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Nonflammable Gas Mixture: Argon 1-99% / Carbon Dioxide 0.5-99%




Section 12. Ecological information

- Products of degradation** : These products are carbon oxides (CO, CO₂).
- Toxicity of the products of biodegradation** : The product itself and its products of degradation are not toxic.
- Environmental fate** : Not available.
- Environmental hazards** : No known significant effects or critical hazards.
- Toxicity to the environment** : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1956	COMPRESSED GAS, N.O.S.	2.2	Not applicable (gas).		-
TDG Classification	UN1956	COMPRESSED GAS, N.O.S.	2.2	Not applicable (gas).		Explosive Limit and Limited Quantity Index 0.125 Passenger Carrying Road or Rail Index 75
Mexico Classification	UN1956	COMPRESSED GAS, N.O.S.	2.2	Not applicable (gas).		-

Section 15. Regulatory information

United States

- U.S. Federal regulations** : TSCA 8(b) inventory: Carbon Dioxide; argon
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Carbon Dioxide; argon
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Carbon Dioxide: Sudden Release of Pressure, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; argon: Sudden Release of Pressure
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean air act (CAA) 112 accidental release prevention: No products were found.
Clean air act (CAA) 112 regulated flammable substances: No products were found.
Clean air act (CAA) 112 regulated toxic substances: No products were found.
- State regulations** : Pennsylvania RTK: Carbon Dioxide: (generic environmental hazard); argon: (generic environmental hazard)
Massachusetts RTK: Carbon Dioxide; argon
New Jersey: Carbon Dioxide; argon

Nonflammable Gas Mixture: Argon 1-99% / Carbon Dioxide 0.5-99%

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class D-2A: Material causing other toxic effects (VERY TOXIC).
CEPA DSL: Carbon Dioxide; argon

Section 16. Other information

United States

Label Requirements : CONTENTS UNDER PRESSURE.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
LUNGS, CARDIOVASCULAR SYSTEM, SKIN, CENTRAL NERVOUS SYSTEM, EYE,
LENS OR CORNEA.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Canada

Label Requirements : Class A: Compressed gas.
Class D-2A: Material causing other toxic effects (VERY TOXIC).

Hazardous Material Information System (U.S.A.) :

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

National Fire Protection Association (U.S.A.) :



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

STATE FIRE MARSHAL NEVADA CHEMICAL INFORMATION SHEET

1 CAS NUMBER <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">1</div> <div style="border: 1px solid black; padding: 2px;">2</div> <div style="border: 1px solid black; padding: 2px;">0</div> <div style="border: 1px solid black; padding: 2px;">3</div> <div style="border: 1px solid black; padding: 2px;">0</div> <div style="border: 1px solid black; padding: 2px;">8</div> <div style="border: 1px solid black; padding: 2px;">8</div> <div style="border: 1px solid black; padding: 2px;">5</div> </div>	2 CHEMICAL NAME POTASSIUM SUPEROXIDE	3 COMMON NAME	4 CHEMICAL CONTENT <input checked="" type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input checked="" type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input checked="" type="checkbox"/> FIRE <input type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input checked="" type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE <u>649 POUNDS</u> AVERAGE QTY/TYPE ON SITE <u>649 POUNDS</u>	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">Z</div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">4</div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; text-align: center; margin: 0 auto;">1</div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION <u>ECR3 STATION 07+99</u> NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: <u>365</u> CHECK IF CONFIDENTIAL STORAGE SITE <input checked="" type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input checked="" type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				

1 CAS NUMBER <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	2 CHEMICAL NAME	3 COMMON NAME	4 CHEMICAL CONTENT <input type="checkbox"/> Mixture <input type="checkbox"/> Pure	5 TRADE SECRET <input type="checkbox"/>
6 PHYSICAL STATE <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS	7 HEALTH HAZARD (Check all that apply) <input type="checkbox"/> ACUTE OR IMMEDIATE <input type="checkbox"/> CHRONIC OR DELAYED		8 PHYSICAL HAZARD (Check all that apply) <input type="checkbox"/> FIRE <input type="checkbox"/> SUDDEN RELEASE OF PRESSURE <input type="checkbox"/> REACTIVITY	
9 INVENTORY AMOUNT MAXIMUM QTY/TYPE ON SITE _____ AVERAGE QTY/TYPE ON SITE _____	10 CONTAINER TYPE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	11 TEMPERATURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	12 PRESSURE ENTER CODE <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	
13 LOCATION: SITE PLAN COORDINATES _____ PAGE _____ DESCRIBE LOCATION _____ NUMBER OF DAYS A YEAR CHEMICAL IS ON SITE: _____ CHECK IF CONFIDENTIAL STORAGE SITE <input type="checkbox"/>				
14 MANUFACTURING FOR TRANSPORT INFORMATION: CHECK IF NOT APPLICABLE <input type="checkbox"/> AVERAGE AMOUNT MFG FOR TRANSPORT _____ <input type="checkbox"/> CHECK IF YEAR AROUND OR IF SEASONAL, WHEN? _____				

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

LABEL IDENTIFIER: Life-Saver 60

PRODUCT IDENTIFIER: P/N 815500 Life-Saver 60 Self-Contained Self Rescuer (SCSR)
P/N 815800 Life-Saver 60 Self-Contained Self Rescuer (SCSR) with Mounting Bracket

PRODUCT DESCRIPTION: This device is an oxygen generating escape breathing apparatus containing potassium superoxide and a chlorate candle for ignition.

COMPANY IDENTIFICATION: MINE SAFETY APPLIANCES
P.O. Box 439
Pittsburgh, PA 15230
CUSTOMER SERVICE: 1-800-MSA-2222 (8:30 am – 5:00 pm, local US time)
EMERGENCY: 1-800-255-3924 (CHEM-TEL, INC.)

2. Composition/Information on Ingredients

	%	Synonym(s)
Canister Body Contents: approx. 800 grams		
Potassium superoxide (CAS 12030-88-5)	>80	KO ₂ , Potassium hyperoxide
Oxygen Candle: approx. 40 grams		
Sodium chlorate (CAS 7775-09-9)	<90	NaClO ₃
Barium peroxide (CAS 1304-29-6)	<10	BaO ₂
Flash Powder (CAS 7778-74-7)	<0.1	KClO ₄

OSHA REGULATORY STATUS: Hazardous by definition of Hazard Communication Standard, 29 CFR 1910.1200.

3. Hazards Identification

EMERGENCY OVERVIEW: Device is a black oval-shaped canister and cover approximately 7.37 inches long, 4.87 inches wide, and 5.87 inches high, weighing about six pounds, with no odor. Material in canister is a strong oxidizer, contact with combustible material may cause fire. Material reacts vigorously with water generating heat, oxygen and corrosive solution. Material causes eye and possible skin burns.

PHYSICAL HAZARD:

Canister: strong water reactive oxidizer, reacts violently with water generating oxygen heat and caustic potassium hydroxide solution. Some organics (such as ethyl alcohol) will spontaneously combust on contact with KO₂.

Candle: oxidizer; candle primer assembly is supplemented with flash powder (KClO₄).

POTENTIAL HEALTH HAZARDS:

Canister: Potassium superoxide is a canary yellow solid, either fine powder or granules, with no odor. Strong Oxidizer. Contact with other material may cause fire. Causes severe eye, skin, and respiratory tract burns.

Candle: Irritation. Toxic by ingestion. Chlorate poisoning is characterized by a latent period of a few hours, followed initially with nausea, vomiting, and diarrhea, followed by cyanosis, hemolysis and subsequent renal failure.

4. First Aid Measures

EMERGENCY AND FIRST AID PROCEDURES: Exposure to chemical solids contained in canister is not anticipated under intended conditions of use and overexposure is highly unlikely. First aid procedures are listed here should overexposure somehow occur.

CHEMICAL CAUSES SEVERE ALKALI AND THERMAL BURNS! SEND TO A PHYSICIAN IN ALL CASES.

EYES: Immediately flush eyes with plenty of water for 15 minutes, holding eyes open.

SKIN: Immediately shake any material from skin, remove contaminated clothing, then flush skin with copious amounts of water for at least 15 minutes. Discard contaminated clothing and shoes.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

INGESTION: Do not induce vomiting. Give demulcent such as milk, olive oil, or margarine in small amounts up to 2 or 3 ounces. Never give anything by mouth to an unconscious person.

GET MEDICAL ATTENTION IMMEDIATELY IN ALL CASES.

5. Fire Fighting Measures

FLASH POINT: N/A

Candle and KO_2 decompose releasing oxygen

LEL N/A

UEL N/A

EXTINGUISHING MEDIA: Water – Use extinguishing media appropriate for surrounding fire. Do not use powdered graphite.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Containers may rupture in fire. Liberated oxygen will intensify fire. Water will leach strong alkaline material from canister producing a caustic run-off solution. Avoid skin contact with run-off water.

PROTECTION OF FIRE FIGHTERS: Wear full protective clothing, including protective gloves and boots. For respiratory protection, wear a NIOSH approved self-contained breathing apparatus with full facepiece operated in a positive-pressure mode. Protect against corrosive smoke, dust, and waters.

6. Accidental Release Measures

PROCEDURES FOR SPILL OR LEAK CLEANUP: Avoid contact with chemicals. Wear recommended protective equipment. Scoop solids into properly labeled, unpainted, DRY metal container and cover. Take immediately to a waste handling area. Handle in compliance with all local, state, and federal laws and regulations.

7. Handling and Storage

HYGIENIC PRACTICES: Direct Exposure to KO_2 , NaClO_3 and KClO_4 is not anticipated during normal canister usage.

STORAGE: store in a cool, dry area protected from crushing or impact forces. Store separate from incompatible materials such as organics or combustibles.

8. Exposure Controls/Personal Protection

EXPOSURE LIMITS:

	<u>TLV</u>
Canister Body Contents: Approx. 800 grams KO ₂ (CAS 12030-88-5)	Not Listed
Oxygen Candle: approx. 40 grams NaClO ₃ (CAS 7775-09-9) BaO ₂ (CAS 1304-29-6)	Not Listed 0.5% mg/M ³ * *Ba soluble compounds
KClO ₄ (CAS 7778-74-7)	10mg/M ³ Total dust with no Asbestos

PERSONAL PROTECTIVE EQUIPMENT WHEN EXPOSURE IS POSSIBLE: Wear chemical protective goggles; faceshield; chemically resistant and water impervious clothing; chemically resistant neoprene, vinyl, or rubber gloves; rubber boots; NIOSH approved self-contained breathing apparatus with a full facepiece operated in a positive-pressure mode.

WORK PRACTICES: follow detailed instructions supplied with apparatus

9. Physical and Chemical Properties

APPEARANCE AND ODOR: (Combination)	Canister: Contains yellow KO ₂ granules, odorless Candle: Light grey solid mass, odorless
DISSOCIATION TEMP: (KO ₂ Granules)	KO ₂ decomposes at 425°C
SPECIFIC GRAVITY (Candle):	Approximately 2.2
BULK DENSITY: (KO ₂ Granules)	Approx. 0.8
VAPOR DENSITY:	(AIR = 1) - N/A
PERCENT VOLATILE BY VOLUME:	N/A
FORMULA:	Apparatus contains Potassium superoxide (KO ₂), Sodium chlorate (NaClO ₃), Barium peroxide (BaO ₂), and a primer assembly.

10. Stability and Reactivity

CONDITIONS OR MATERIALS TO AVOID: Avoid easily oxidized materials, organics (including fuels, solvents, greases, lubricants), acids, combustibles. Contact of these materials with canister contents will cause a violent reaction and rupture of the canister.

11. Toxicological Information

This product has not been tested for health hazards. The assumption is made in the OSHA Hazard Communication Standard that an untested mixture will present the same health hazards as do the components which comprise one percent or more.

Potassium superoxide readily reacts with water in the body to form potassium hydroxide. KO_2 , KO_2 dust, and potassium hydroxide are caustic and will cause caustic burns to the eyes and may cause burns to the skin or mucous membranes of the respiratory tract.

Skin will turn red and may turn black. Exposure may cause an itching or burning sensation which may go away. A severe burn may be less painful than a minor one because tissue and nerves will be destroyed.

KO_2 is not listed in the National Toxicology Program (NTP) Annual Report on Carcinogens, not found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs, and not listed as an OSHA carcinogen.

Sodium chlorate is an eye, skin, and respiratory irritant. Several reports of accidental or suicidal swallowing of sodium chlorate indicate that chlorate poisoning is characterized by a latent period of a few hours, followed initially with nausea, vomiting and diarrhea, followed by cyanosis, hemolysis and subsequent renal failure. Blood effects (hemolytic anemia and methemoglobinemia) as well as kidney and stomach effects were reported. Similar effects on the blood (anemia) have been noted in laboratory animals at high dose levels. Other effects noted in animal tests were: immediate vomiting, death, slight decreases in adrenal weights, decreases in body weight gain, and effects on red blood cells indicative of anemia and decreased fragility in osmotic fragility of red blood cells. In controlled clinical studies with human volunteers administered 500 ml of a 5 ppm solution of sodium chlorate in water for 12 weeks, no adverse effects were found. Skin allergy was not observed in guinea pigs following repeated skin exposure. Both positive and negative mutagenic effects were observed in bacterial cells and flies; several studies in animals and animal cells have been negative. No adverse effects on the mother or fetus were noted in rats given oral doses during pregnancy at levels up to 1000 mg/kg/day.

Barium peroxide may cause skin or eye irritation with redness, swelling, itching, tearing of eyes, and pain. Inhalation may irritate the respiratory tract with coughing, shortness of breath, laryngitis, sore throat and runny nose. If sufficient amounts are inhaled and absorbed, symptoms may resemble those in acute indigestion. Inhalation may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. 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 include ringing of the ears, dizziness, elevated blood pressure, blurred vision and tremors. This product is not listed in the National Toxicology Program (NTP) Annual Report on Carcinogens, not found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs, not listed by OSHA.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: Persons with preexisting skin conditions may be more susceptible to the effects of this product.

12. Ecological Information

Potassium superoxide: No data available. KO_2 reacts with water to produce potassium hydroxide (KOH) that will increase the pH of water and/or soil to create conditions that may kill fish and other living organisms. Ecotoxicity data for KOH: TLM(Mosquito fish) is 80 ppm/24 hr fresh water. Conditions of bioassay not specified.

Sodium chlorate was reported to be "practically nontoxic" in tested species. 48 hour LC50 Daphnia: >1,000 mg/l; 96 hour EC50 Freshwater Algae (static) 133 mg/l; 96 hour LC50 Mysid Shrimp (flow-through): >1,000 mg/l; 96 hour LC50 Bluegill (flow-through): >1,000 mg/l; 96 hour LC50 Rainbow Trout (flow-through): >1,000 mg/l; 96 hour LC50 Sheepshead Minnow (flow-through): >1,000 mg/l; 96 hour LC50 oyster shell deposition (flow-through): >1,000 mg/l

The single dose oral LD50 of sodium chlorate in Mallard ducks was greater than 2510 mg/kg. The five day dietary LC50 to Mallard ducks and northern Bobwhite Quail were both greater than 5620 ppm. A single spraying of the equivalent of 348 pounds per acre of sodium chlorate produced a significant impairment of growth, seed germination and seedling emergence in 10 non-target plant species.

13. Disposal Information

WASTE DISPOSAL: The procedure below is an option for potential use by permitted hazardous waste management facilities. Hazardous waste management facilities should comply with local, state and federal requirements.

When discarded by a United States generator, a Life-Saver 60 canister is a hazardous waste with the U.S. EPA Hazardous Waste Numbers of D001 and D005, any applicable state waste codes, and any additional codes that should be applied based on the unique situation of the generator and the conditions of the product's use. The D001 code applies because the potassium superoxide in the canister is a U.S. Department of Transportation oxidizer; the D005 code applies because the candle within the device contains barium. Generators should use this information and any user-specific data to make their own hazardous waste determination.

The following procedure is included solely to address safe handling and deactivation of Life-Saver canisters and is intended for use by permitted hazardous waste management facilities. Because waste management regulations depend on generator status and location, this generic procedure may not meet treatment standards required by applicable laws and regulations. Those employing these procedures must therefore independently assure compliance with all local, state, and federal requirements. Read the entire procedure first!

Properly protect the eyes and skin of the individual performing the disposal procedure. Wear chemical protective goggles and caustic resistant impermeable gloves. See PERSONAL PROTECTIVE EQUIPMENT WHEN EXPOSURE IS POSSIBLE.

2. Select a well ventilated area, preferably outdoors, free from flammable materials. DO NOT puncture the canister underground.
3. Be certain the Life-Saver 60 SCSR's lid is removed.
4. Remove the mouthpiece plug and activate ("fire") the candle, if unused, by extending the mouthpiece. Avoid touching the metal part of the canister since it becomes quite hot. Allow the canister to cool for 10 to 15 minutes.
5. Remove the mouthpiece and breathing bag by removing the clamp. Cut off the neck and waist straps. Punch 6 equally spaced holes, at least 0.5 inch in diameter, on the front of the canister approximately mid point from top to bottom.
6. Fill a clean 10-gallon steel or polypropylene container with 5 to 6 gallons of clean tap water.
7. Dissolve 3 lbs. (1.4 kg) of 90+% pure sodium bicarbonate in the water.
8. Slowly place one punctured canister into the solution using tongs or other hand extension device. The canister must remain at least 3 inches under the water's surface. The water will bubble as the chemicals within the canister begin to dissolve. Avoid breathing mist generated in this procedure since it may be caustic and cause damage to respiratory passages.
9. When the bubbling stops, the pH of the water solution should be below 12.
10. Remove the canister from the water solution. DO NOT touch the canister without gloves! If the skin comes in contact with solution, wash the exposed area immediately and completely with water.
11. Drain the canister thoroughly, and allow it to dry.

12. The candle assembly (which contains approximately 2.0 grams of barium as salts) will be present in the canister. Handle the canister as a hazardous waste, and dispose of it according to local, state, and federal regulations. Alternatively, cut off the bottom of the canister, remove the candle within the canister and dispose these materials as hazardous waste. The empty canister body is disposed as separate scrap material.
13. The total concentration of metals in the water solution after canister immersion is normally below 25 parts per million, by weight. Filter solids from this solution using medium grade filter paper.
14. "Sludge" collected on the filter contains copper, lead, barium salts and ceramic. This material should be disposed according to local, state and federal regulations.
15. The filtered water can be routed to a permitted wastewater treatment facility if allowed by the treatment plant authority (consult treatment plant authority for guidance).
16. If more than one canister is to be disposed, the above procedure must be repeated for each canister.

14. Transport Information

This product is a U.S. Department of Transportation (DOT) Hazardous Material.

Proper Shipping Name:	Oxygen generator, chemical
Hazard Class or Division:	5.1
Identification Number:	UN3356
Packaging Group:	II

This device has been classified and approved for shipment by U.S. DOT in accordance with Classification Document DOT EX-9709047 and Approval CA-9709009. Shipper should carefully review these documents which are available from the Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration; U.S. Department of Transportation, 400 7th Street, SW, Washington, DC 20590-0001. Tel: 1-800-467-4922. Web site: www.rspa.dot.gov. Copies of these documents are also available at www.msanet.com/prism.

15. Regulatory Information

Canister:

SARA 313 Information: This item does not contain a toxic chemical or chemical subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

This item content is not subject to the Pennsylvania Worker and Community Right-To-Know Act.

Candle:

SARA 313 Information: This item contains 1-5% weight percent of barium peroxide, a barium compound, CAS Number: 1304-29-6, a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

Pennsylvania: This product contains sodium chlorate and barium peroxide which are subject to the Pennsylvania Worker and Community Right-To-Know Act.

California: The sodium chlorate component sometimes contains trace amounts of chromium (up to 25 parts per million). The following warning is provided to comply with California law. Warning! This product contains a chemical known to the State of California to cause cancer.

16. Other Information

WARNING: This is a hazardous chemical product. By following the directions and warnings provided with this product, the hazards associated with the use of this product can be greatly reduced but never entirely eliminated. Mine Safety Appliances Company makes no warranties, expressed or implied, with respect to this product and **EXPRESSLY DISCLAIMS THE WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** Users assume all risks in handling, using or storing this product.

04-025



**RICCA CHEMICAL
COMPANY**
**Material Safety
Data Sheet**


Section 1: Chemical Product and Company Identification

Catalog Numbers: 6590, 6591	
Product Identity: REAGENT ALCOHOL, ANHYDROUS, ABSOLUTE, 200 PROOF	
Manufacturer's Name: RICCA CHEMICAL COMPANY	Emergency Contact(24 hr) CHEMTREC: 800-424-9300
CAGE Code: 0V553	
Address: PO BOX 13090 ARLINGTON, TX 76094	Telephone Number For Information: 817-461-5601
Date Prepared: 8/18/1999	Revision: 4 Last revised: 6/24/2003 Print Date: 11/20/2003

Section 2. Composition/Information on Ingredients

Component	CAS Registry#	Percent Concentration	ACGIH TLV	OSHA PEL
Ethyl Alcohol (Ethanol)	64-17-5	89.5-91.4	1000 ppm 1880 mg/m ³	1000 ppm 1900 mg/m ³
Methanol (Methyl Alcohol)	67-56-1	4-6	200 ppm 262 mg/m ³	200 ppm 260 mg/m ³
Isopropyl Alcohol (Isopropanol, 2-Propanol)	67-63-0	4-6	400 ppm 983 mg/m ³	400 ppm 980 mg/m ³

Section 3 : Hazard Identification

Emergency Overview: Flammable liquid. Poison. Cannot be made nonpoisonous. May be fatal or cause blindness if swallowed. If ingested, give large quantity of water and induce vomiting. Call a physician. Contact may cause dryness and cracking of the skin. May cause irritation to the eyes. Wash areas of contact with plenty of water. May cause irritation of the respiratory system.

Target Organs: eyes, skin, respiratory system, central nervous system, liver, pancreas.

Eye Contact: May cause irritation with burning and stinging with possible damage to the cornea and conjunctiva.

Inhalation: Inhalation of vapors irritates the respiratory tract. May cause coughing, dizziness and headache. Exposure to high concentrations can cause depression of the central nervous system with symptoms of sleepiness and lack of concentration.

Skin Contact: Results in drying and cracking which can lead to secondary infections and dermatitis.

Ingestion: Symptoms can include sleep disorders, hallucinations, distorted perceptions, ataxia, motor function changes, convulsions and tremors, coma, headaches, pulmonary changes, alteration of gastric secretions,

blindness, and in acute cases, death.

Chronic Effects/Carcinogenicity: None

IARC - Isopropyl Alcohol (Isopropanol, 2-Propanol) is unclassifiable as to carcinogenicity to humans.

NTP - No.

OSHA - No.

Teratology (Birth Defect) Information: Mutation data cited in 'Registry of Toxic Effects of Chemical Substances' for Ethyl Alcohol (Ethanol). Mutation data cited in 'Registry of Toxic Effects of Chemical Substances' for Methanol (Methyl Alcohol). Mutation data cited in 'Registry of Toxic Effects of Chemical Substances' for Isopropyl Alcohol (Isopropanol, 2-Propanol).

Reproductive Information: Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Ethyl Alcohol (Ethanol). Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Methanol (Methyl Alcohol). Reproductive effects cited in 'Registry of Toxic Effects of Chemical Substances' for Isopropyl Alcohol (Isopropanol, 2-Propanol).

Section 4. First Aid Measures – In all cases, seek qualified evaluation.

Eye Contact: Irrigate immediately with large quantity of water for at least 15 minutes. Call a physician if irritation develops.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Skin Contact: Wash areas of contact with soap and water for at least 15 minutes. Call a physician if irritation develops.

Ingestion: Dilute immediately with water or milk. Induce vomiting. Call a physician.

Section 5. Fire Fighting Measures

Flash Point: 12.5°C

Method Used: CC

LFL: 3.3%

UFL: 19%

Extinguishing Media: Use water spray, dry chemical, alcohol foam, or carbon dioxide for extinguishing the surrounding fire. Water spray can be used to dilute spills to non-flammable mixtures.

Fire & Explosion Hazards: Vapors can flow along surfaces to distant ignition source and flashback. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Explosion hazard when exposed to heat, flame or oxidizers.

Fire Fighting Instructions: Poisonous gases are produced in fire. Continue to cool containers with water after fire is extinguished. For larger fires, use unmanned hose apparatus, if possible. Consider down wind conditions. Do not release runoff from fire-fighting measures to sewers or waterways.

Fire Fighting Equipment: Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Section 6. Accidental Release Measures

Remove all sources of ignition. Contain spill. Do not flush to sewer. Absorb with suitable inert material (vermiculite, dry sand, etc) and place in a chemical waste container for proper disposal in an approved waste disposal facility. Ventilate area of spill. Have extinguishing agent available in case of fire. Use non-sparking tools and equipment. Dispose of in accordance with local regulations.

Section 7. Handling and Storage

As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. Store in secure, flammable storage area away from all sources of ignition. Empty containers may be hazardous since they retain product residues.

SAFETY STORAGE CODE: Flammable

Section 8. Exposure Control/Personal Protection

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limit.

Respiratory Protection: Normal room ventilation is adequate. If the exposure limit is exceeded, a full facepiece respirator with organic vapor cartridge may be worn.

Skin Protection: Chemical resistant gloves.

Eye Protection: Safety glasses or goggles.

Section 9. Physical and Chemical Properties

Appearance: Clear, colorless liquid

pH: Not Available.

Odor: characteristic alcohol

Boiling Point(°C): Approximately 76

Solubility in Water: Infinite

Melting Point(°C): Approximately -110

Specific Gravity: Approximately 0.8

Vapor Pressure: Not Applicable.

Section 10. Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.

Incompatibility: Oxidizers, platinum, Sodium, Potassium Dioxide, Bromine Pentafluoride, Acetyl Bromide, Acetyl Chloride, concentrated Nitric Acid, Sulfuric Acid, heat, sparks, open flame.

Hazardous Decomposition Products: Acrid and irritating fumes, including toxic oxides of carbon, when heated to decomposition.

Hazardous Polymerization: Will not occur.

Section 11. Toxicological Information

LD50, Oral, Rat: (Methanol) 5628 mg/kg, details of toxic effects not reported other than lethal dose value, (Ethanol) 7060 mg/kg, respiration changes noted, (Isopropanol) 5045 mg/kg, behavioral effects noted.

Section 12. Ecological Information

Ecotoxicological Information: Ethanol has moderate chronic toxicity to aquatic life.

Chemical Fate Information: This material is not expected to significantly bioaccumulate. Ethanol is slightly persistent in water, with a half-life of between 2 to 20 days.

Section 13. Disposal Considerations

Do not flush to sewer. Absorb with suitable inert material (vermiculite, dry sand, earth) and place in a chemical waste container for proper disposal in an approved waste disposal facility for incineration in a chemical incinerator equipped with scrubber and afterburner. Ventilate area of spill. Have extinguishing agent available in case of fire. Eliminate all sources of ignition. Use non-sparking tools and equipment. Always dispose of in accordance with local, state and federal regulations.

Section 14. Transport Information

D.O.T. Shipping

Name: Ethanol Solutions
D.O.T. Hazard Class: 3
U.N. / N.A. Number: UN1170
Packing Group: II
D.O.T. Label : Flammable(3)



Section 15. Regulatory Information (Not meant to be all inclusive - selected regulation represented)

OSHA Status: These items meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA Status: All components of this solution are listed on the TSCA Inventory or are mixtures (hydrates) of items listed on the TSCA Inventory.

CERCLA Reportable Quantity: Methanol (Methyl Alcohol) - 5,000 pounds.

Sara Title III:

Section 302 Extremely Hazardous Substances: No.

Section 311/312 Hazardous Categories: No

Section 313 Toxic Chemicals: 1.0% DiMinimis concentration.

RCRA Status: 67-56-1(Methanol (Methyl Alcohol))

California: None reported.

Florida: Ethyl Alcohol (Ethanol) is listed on Florida's Toxic Substances List. Methanol (Methyl Alcohol) is listed on Florida's Toxic Substances List. Isopropyl Alcohol (Isopropanol, 2-Propanol) is listed on Florida's Toxic Substances List.

Pennsylvania: Ethyl Alcohol (Ethanol) is listed as a Basic Hazard on the state's Hazardous Substances List. Methanol (Methyl Alcohol) is listed as an Environmental Hazard on the state's Hazardous Substances List. Isopropyl Alcohol (Isopropanol, 2-Propanol) is listed as an Environmental Hazard on the state's Hazardous Substances List.

WHMIS Information (Canada):

B-2: Flammable and Combustible Material. Flammable Liquid.



Section 16. Other Information

NFPA Ratings:	Health: 1	Flammability: 3	Reactivity: 0	Special Notice Key: None
HMIS Ratings:	Health: 1	Flammability: 3	Reactivity: 0	Protective Equipment: B (Protective Eyewear, Gloves)

Rev 1, 12-10-99: (Section 1) Revised emergency telephone number to CHEMTREC® 800-424-9300.

Rev 2, 9-27-2000: Reformatted from WordPerfect® to Microsoft Word®; (Section 14) revised DOT shipping name from Alcohol Solutions, n.o.s. UN1987.

Rev 3, 10-09-2001: Reformatted to electronic data format.

Rev 4, 06-24-2003: (Section 1) added catalog number 6591.

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>WELD-ON 16 FOR ACRYLIC</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>20 FLUID OUNCES</u>	
6. CONTAINER TYPE(S): <u>F</u>			
7. LOCATION <u>NORTH PORTAL PAD TRAILER 7016 (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

IPS

MATERIAL SAFETY DATA SHEET

Date Revised: SEP 2002

WELD-ON

Supersedes: JUL 2002

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act and shall not be used for any other purpose. IPS Corporation urges the customers receiving this Material Safety Data Sheet to study it carefully to become aware of the hazards, if any, of the product involved. In the interest of safety, you should notify your employees, agents and contractors of the information on this sheet.

SECTION I

MANUFACTURER'S NAME

IPS Corporation

ADDRESS

17109 S. Main St., P.O. Box 379, Gardena, CA. 90248

Transportation Emergencies:

CHEMTREC: (800) 424-9300 or 3 E COMPANY (800) 451-8346

Medical Emergencies:

3 E COMPANY (24 Hour No.) (800) 451-8346

Business: (310) 898-3300

CHEMICAL NAME and FAMILY

Acrylic cement

Mixture of Acrylic Resin and Organic Solvents

TRADE NAME:

WELD-ON 16 for Acrylic

FORMULA: Proprietary

SECTION II - HAZARDOUS INGREDIENTS

One of the ingredients listed below is listed as

a carcinogen (±) by IARC and NTP

	CAS#	APPROX %	ACGIH-TLV	ACGIH-STEL	OSHA-PEL	OSHA-STEL
Synthetic Acrylic Resin	NON/HAZ		N/A		N/A	
Methylene Chloride (±)	75-09-2	45.0*	50 PPM		25 PPM	125 PPM
Methyl Ethyl Ketone (MEK)	78-93-3	27.0*	200 PPM	300 PPM	200 PPM	300 PPM
Methyl Methacrylate Monomer	80-62-6	<1.0	100 PPM		100 PPM	

All of the constituents of Weld-On adhesive products are listed on the TSCA inventory of chemical substances maintained by the US EPA, or are exempt from that listing.

*Title III Section 313 Supplier Notification: This product contains toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40CFR372. This information must be included in all MSDS's that are copied and distributed for this material.

PROPOSITION 65 NOTICE

This product contains chemicals known to the state of California to cause cancer.

This material is an aspiration hazard and defats the skin. The ingredients are toxic by inhalation and ingestion and may be absorbed through the skin. Exposure by these routes may cause central nervous system depression, liver and kidney damage and may sensitize the heart muscle. Methylene Chloride may interfere with the oxygen carrying capacity of the blood. Methylene Chloride is a possible human cancer hazard based on test results with laboratory animals. Methylene Chloride has been listed as a potential carcinogen by IARC and NTP. Methylene Chloride is not believed to pose a measureable risk to man when handled as recommended. Under some circumstances, mutagenic changes have been observed with Methyl Methacrylate in animal studies. Precautions should be taken to avoid unnecessary exposure to this cement.

SHIPPING INFORMATION

DOT Shipping Name: Flammable liquid, toxic, n.o.s. (Methyl Ethyl Ketone,
Dichloromethane)
DOT Hazard Class: 3; Subsidiary Risk: 6.1
Identification Number: UN 1992
Packaging Group: II
Label Required: Flammable Liquid & Keep Away From Food (Domestic);
Flammable Liquid & Toxic (International).

Exceptions: None

SPECIAL HAZARD DESIGNATIONS

	HMIS	NFPA	HAZARD RATING
HEALTH:	3	2	0 - MINIMAL
FLAMMABILITY:	3	3	1 - SLIGHT
REACTIVITY:	0	0	2 - MODERATE
PROTECTIVE			3 - SERIOUS
EQUIPMENT:	B - H		4 - SEVERE
B = Eye, Hand/Skin Protection (Normal use or application & small spill clean-up activities)			
H = Eye, Hand/Skin and Respiratory Protection plus Impermeable Apron (When risk of immersion, dipping and/or splashing is present)			

SECTION III - PHYSICAL DATA

APPEARANCE Clear, thin liquid	ODOR Ketone like odor	BOILING POINT (°F/°C) 104°F (40°C) Based on first boiling component: Methylene Chloride
SPECIFIC GRAVITY @ 73°F ± 3.6° (23°C ± 2°) Typical 1.02 ± 0.040	VAPOR PRESSURE (mm Hg.) 355 mm Hg. @ 68°F (20°C) based on first boiling component, Methylene Chloride	PERCENT VOLATILE BY VOLUME (%) Approx. 80-95%
VAPOR DENSITY (Air = 1) 2.93 based on Methylene Chloride	EVAPORATION RATE (BUAC = 1) Approx. 14.5 based on Methylene Chloride	SOLUBILITY IN WATER Solvent slightly miscible Resin precipitates

VOC STATEMENT: Maximum VOC emissions as applied and tested per SCAQMD Rule 1168, Test Method 316A: 350 Grams/Liter (g/l). Meets VOC emission limits for Plastic Cement Welding.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 21°F (-6°C) T.C.C. based on MEK	FLAMMABLE LIMITS (Percent by Volume)	LEL 1.8	UEL 11.5
FIRE EXTINGUISHING MEDIA Dry chemical, carbon dioxide or foam. Water may be an ineffective extinguishing agent.			
SPECIAL FIRE FIGHTING PROCEDURES The use of a SCBA is recommended for fire fighters. Water spray may be useful in minimizing vapors and cooling containers exposed to heat and flame. Avoid spreading burning liquid with water used for cooling purposes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Avoid hot surfaces and other sources of ignition.			

SECTION V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY:

Inhalation
 Skin Contact
 Eye Contact
 Ingestion

EFFECT OF OVEREXPOSURE

ACUTE:

Inhalation: Exposure to vapors may result in nausea, drowsiness, dizziness, headache, fatigue, other CNS effects and heart arrhythmias (irregular heart beats). Can cause irritation of eyes and nasal passages. Exposure to high concentrations may impair blood's ability to transport oxygen. Prolonged or repeated exposure to vapors may cause liver and kidney damage.

Skin Contact: Repeated or prolonged contact may result in defatting of skin, irritation, contact dermatitis, rash, itching, swelling. May be absorbed through skin.

Eye Contact: Direct exposure may result in irritation with corneal or conjunctival inflammation if not removed promptly. Vapors may irritate eyes.

Ingestion: Moderately toxic. Irritant to digestive tract, may induce signs of central nervous system depression. Do not induce vomiting and obtain prompt medical attention.

CHRONIC:

Inhalation † This material is an aspiration hazard and defats the skin. The ingredients are toxic by inhalation and ingestion and may be absorbed through the skin. Exposure by these routes may cause central nervous system depression, liver and kidney damage and may sensitize the heart muscle. Methylene Chloride may interfere with the oxygen carrying capacity of the blood. Methylene Chloride is a possible human cancer hazard based on test results with laboratory animals. Methylene Chloride has been listed as a potential carcinogen by IARC and NTP. Methylene Chloride is not believed to pose a measurable risk to man when handled as recommended. Under some circumstances, mutagenic changes have been observed with Methyl Methacrylate in animal studies. Precautions should be taken to avoid unnecessary exposure to this cement.

Ingestion Ingestion of alcohol may increase the potential for development of toxic effects or reactions resulting from Methylene Chloride exposure.

REPRODUCTIVE EFFECTS TERATOGENICITY MUTAGENICITY EMBRYOTOXICITY SENSITIZATION TO PRODUCT SYNERGISTIC PRODUCTS

N. AP. POSS. N. AP. POSS. N. AP. N. AV.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: This material may aggravate an existing dermatitis. Individuals with pre-existing diseases of the heart, liver or kidney may have increased susceptibility to the toxicity of excessive exposures.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Remove patient to fresh air and if breathing stopped, give artificial respiration. If breathing is difficult, give oxygen. Contact physician immediately.

Eye Contact: Immediately flush eyes with flowing water for 15 minutes and contact a physician.

Skin Contact: Wash skin with soap and water. Remove contaminated clothing and shoes. Launder clothing before reuse. If irritation develops, get medical attention.

Ingestion: Give 1 or 2 glasses of water or milk. Do not induce vomiting. Call physician or poison control center immediately.

SECTION VI - REACTIVITY

STABILITY	UNSTABLE		CONDITIONS TO AVOID: Stable under normal conditions of storage and handling. Avoid contact or exposure to fire, heat, sparks, electric arcs, open flame and hot surfaces which can cause thermal decomposition.
	STABLE	X	

INCOMPATIBILITY (MATERIALS TO AVOID) Strong alkalis, oxygen, nitrogen, peroxide, potassium and reactive metals.

HAZARDOUS DECOMPOSITION PRODUCTS
This product gives out carbon monoxide (CO), carbon dioxide (CO₂), Phosgene gas and smoke upon combustion or contact with reactive metals.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID Keep away from heat, sparks, open flame and other sources of ignition.
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Evacuate area, ventilate and avoid breathing vapors. Dike area to contain spill. Clean up area (wear protective equipment) by mopping or with absorbent material and place in closed containers for disposal. Avoid contamination of ground and surface waters. Do not flush to sewer. If spill occurs indoors, turn off heating and/or air conditioning systems to prevent vapors from contaminating entire building.

WASTE DISPOSAL METHOD
Recovered liquids may be sent to a licensed reclaimer or incineration facility. Contaminated material must be disposed of in a permitted solid waste management facility. Follow local, State and Federal regulations. Material should not be allowed to drain into domestic sewer or storm drains. Consult disposal expert.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Atmospheric levels should be maintained below established exposure limits contained in Section II. If airborne concentrations exceed those limits, use of a NIOSH approved positive-pressure, full-facepiece SCBA or positive-pressure, full-facepiece supplied air respirator (with an auxiliary positive pressure SCBA) is recommended. Even for emergency and other conditions where short term exposure guidelines may/may not be exceeded, use of an approved positive pressure self-contained breathing apparatus (SCBA) is recommended.

VENTILATION
Use only with adequate ventilation. Do not use in close quarters of confined spaces. Open doors and/or windows to ensure airflow and air changes. Use local exhaust ventilation to remove airborne contaminants from employee breathing zone and to keep contaminants below 25 ppm TWA. Use only explosion-proof ventilation equipment. Monitoring should be performed to determine exposure level(s) IAW (in accordance with) 29 CFR 1910.1052.

PROTECTIVE GLOVES PVA coated or Latex-Nitrile rubber for dipping/immersion. Surgical gloves or solvent resistant barrier creme should provide adequate protection in normal adhesive bonding usage.	EYE PROTECTION Splashproof chemical goggles, face shield, safety glasses (spectacles) with brow guards and side shields, etc. as appropriate for exposure.
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OTHER PROTECTIVE EQUIPMENT AND HYGIENIC PRACTICES
Impervious apron and a source of running water to flush or wash the eyes and skin in case of contact.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in a shaded place between 40°F - 110°F (5°C - 43.7°C). Keep away from all sources of heat, sparks, open flame and other sources of ignition. Close container after each use. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Train employees on all special handling procedures before they work with this product.

OTHER PRECAUTIONS
Follow all precautionary information given on container label, product bulletins and our solvent cementing literature. All material handling equipment should be electrically grounded.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>TOUCHDOWN 775 SEAM SEALER CEMENT</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>3 GALLONS</u>	
6. CONTAINER TYPE(S): <u>F</u>			
7. LOCATION <u>NORTH PORTAL PAD PAINTERS SHOP (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

98-021

I. PRODUCT IDENTIFICATION

Trade Name: **TOUCHDOWN #775 SEAM SEALER CEMENT**

Chemical Names, common names: Blend of synthetic resin, rubber and hydrocarbon solvent

Manufacturer's Name: W. F. Taylor Co., Inc.

Address: 1545 Pacific Ave., Fontana, CA 92337

Emergency Phone: (800) 535-5053

Date Prepared: 8/23/00

Business Phone: (909) 360-6677

By: Robert Ddamulira

Preempts Previous MSDS Sheet

H=2 F=4 R=0

II. HAZARDOUS INGREDIENTS

<u>Chemical Names</u>	<u>CAS Numbers</u>	<u>ACGIH(TLV)</u>	<u>Exposure Limits in Air</u>	
			<u>OSHA(PEL)</u>	<u>Percent</u>
Hydrotreated Light Distillate	64810-97-9			35 - 45
Toluene	108-88-3	50 ppm	100 ppm	14 - 20
Methyl Ethyl Ketone	78-93-3	200 ppm	200 ppm	17 - 28

WARNING: California Proposition 65: The following statement is made in order to comply with the California State Drinking Water and Toxic Enforcement Act of 1986: *WARNING: This product contains Toluene, a chemical known to cause birth defects or other reproductive harm.*

III. PHYSICAL PROPERTIES

Boiling Point: 165 - 175°F

Density: 6.5 - 7.5

Solubility in water: NIL

Evaporation Rate (nBuAc=1): >1

Vapor Pressure, mmHg at 25c.: N.D.

Vapor Density: >1 (Air =1)

Appearance: Green or clear color, thin syrup consistency

Odor: Mild odor

Volatile Organic Compound (VOC)

Grams VOC/Liter of Coating: 664

Grams VOC/Liter of Material: 664

IV. FIRE AND EXPLOSION

Flash Point, Tag C.C.: 20°F

Auto Ignition Temperature, F: 550°F

Flammable Limits in air, volume %: Lower: 1.2

Upper: 7.0

Fire Extinguishing Media:

Water Spray Carbon Dioxide Other
 Foam Dry Chemical

Special Firefighting Procedures: Water may spread burning liquid. Avoid stream of water.

Unusual Fire and Explosion Hazards: Do not expose to excessive heat, open flame or sparks. Turn off all pilot lights.

===== **V. HEALTH HAZARD INFORMATION** =====

Symptoms of Overexposure:

Inhalation: May cause nausea, drowsiness or irritate mucous membrane

Eyes: Vapor may cause eye irritation

Skin: May cause skin irritation and rash

Ingestion: May cause vomiting. Symptoms may be same as inhalation

Health Effects or Risks from Exposure:

Acute: May lead to headache, skin rash and central nervous system depression

Chronic: May cause narcosis, unconsciousness from inhalation. May cause dermatitis from chronic skin contact

First Aid: Emergency Procedures:

Eyes Contact: Wash with water. If irritation persists, seek medical attention.

Skin Contact: Remove from skin and apply skin cream. If irritation persists, see a physician.

Inhalation: Remove to fresh air, administer oxygen. If necessary, seek medical attention.

Ingestion: Seek medical attention. DO NOT induce vomiting, this could cause chemical pneumonitis.

Suspected Cancer Agent:

No

Yes: Federal OSHA NTP IARC Cal/OSHA

OTHER WARNING: WARNING: This product contains Toluene, a chemical known to cause birth defects or other reproductive harm.

Medical Conditions Aggravated by Exposure: None known

Recommendations to Physician: Determine if emesis should be induced for ingestion.

===== VI. REACTIVITY DATA =====

Stability: X Stable ___ Unstable

Conditions to Avoid: Excessive heat, open flames or sparks

Incompatibility (materials to avoid): None known

Hazardous Decomposition Products (including combustion products): CO, CO2 and other unidentified organic compounds

Hazardous Polymerization: Will not occur.

===== VII. SPILL, LEAK AND DISPOSAL PROCEDURES =====

CAUTION: Material is flammable, eliminate sources of ignition. For large spills, evacuate area. Dike and contain material. Stop leak, if possible. Use water fog to suppress vapor cloud. Use clay or sand to soak up material. Place material in non-leaking container. Cap tightly.

NOTE: *Dispose of all wastes in accordance with federal, state and local regulations.*

===== VIII. SPECIAL HANDLING INFORMATION =====

Ventilation and Engineering Controls: Use local exhaust. Do not use closed air-circulating system. Open windows and doors, if necessary.

Respiratory Protection: None required, unless exposure is over TLV. Use NIOSH approved respirator.

Eye Protection: Chemical goggles or face shield

Gloves: Acrylonitrile gloves

Other Clothing and Equipment: If clothing becomes contaminated, remove and clean before rewearing.

Work Practices, Hygienic Practices: Follow all label instructions.

Other Handling and Storage Requirements: Protect against physical damage.

Store in a cool place. Keep away from heat and sparks.

Protective Measures During Maintenance of Contaminated Equipment: No smoking. Avoid sparks. Use respirator, unless exposure is known to be below TLV.

===== IX. LABELING =====

Flammable liquid, fire and explosion hazard. Avoid sparks and flame. Keep out of the reach of children. Do not induce vomiting, if ingested. Avoid breathing build-up of vapors. Use with adequate ventilation.

W. F. Taylor believes the data set forth herein are accurate as of the date hereof.
Taylor makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon.
Such data are offered solely for your consideration, investigation and verification.

— Section 1 —
Product Identification



Automotive Finishes

Material Safety Data Sheet

Martin Senour Paints
4440 Warrensville Center Road
Warrensville Hts., OH 44128-2837

Emergency telephone number
Information telephone number
Date of preparation

(216) 566-2917
(216) 566-2902
October 30, 2003

©2003, The Martin Senour Co.

Body Fillers

FIL/N

— Section 2 — CAS No. Hazardous Ingredients (percent by weight)		ACGIH TLV <STEL>	OSHA PEL <STEL>	Units	LD50 (Rat-Oral) mg/kg	LC50 (Rat) ppm/4hr.	Vapor Pressure mm	6369 FIBRE- HAIR*	6370 MICRO LITE*	6371 FIBRE- STRAND*	6372 CUZ*	6378 TEC*	6395 PCF	Cream Hardeners All - Red, Blue 6370T 6370TS 6372T 6372TL
100-42-5 ^S	Styrene	20 <40>	100 C 215	PPM	5000	NAv	4.3	20	14	13	14	17	20-25	
14807-96-6	Talc	2	2	Mg/M3 as Resp. Dust	NAv	NAv		30-35	30-35	40-45	40-45	25-30	20-25	
546-93-0	Magnesium Carbonate	10	10[5]	Mg/M3 as Dust [Resp. Fraction]	NAv	NAv		10-15	5-10	10-15	10-15	5-10	5-10	
471-34-1	Calcium Carbonate	10	10[5]	Mg/M3 as Dust [Resp. Fraction]	6450	NAv			5-10			10-15		0-2
14808-60-7	Quartz	0.05	0.1	Mg/M3 as Dust [Resp. Fraction]	NAv	NAv						0-2		
7631-86-9	Amorphous Silica	10	6	Mg/M3	NAv	NAv							1-5	0-2
94-36-0 ^S	Dibenzoyl Peroxide	5	5	Mg/M3	7710	NAv								45-50
65997-17-3	Fibrous Glass Dust	10	5	Mg/M3	NAv	NAv		1-5					5-10	
Weight per Gallon (lbs.)								13.5	10.4	12.3	14.1	9.3	11.4	10.0
VOC As Packaged -Total Volatile Organic Compounds (lbs/gal)								2.33	1.46	1.56	1.93	1.58	2.40	0.00
VOC As Packaged- Less Water and Exempt Solvents (lbs/gal)								2.33	1.46	1.56	1.93	1.58	2.40	0.00
VOC As Applied - Less Water and Exempt Solvents (lbs/gal)								0.82	0.40	0.43	0.60	0.35	0.34	Not Applicable
Flash Point (°F)								99	106	95	93	93	88	184
DOL Storage Category								1C	2	1C	1C	1C	1C	3A
HMIS (NFPA) Rating (health - flammability - reactivity)								2*-3-2	2*-2-2	2*-3-2	2*-3-2	2*-3-2	2*-3-2	2-2-2

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^S Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

Section 3 — Hazards Identification

ROUTES OF EXPOSURE - INHALATION of vapor or spray mist. EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

EYES: Irritation.

SKIN: Prolonged or repeated exposure may cause irritation.

INHALATION: Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE - Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE - None generally recognized.

CANCER INFORMATION - For complete discussion of toxicology data refer to Section 11.

Section 4 — First Aid Measures

EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

INHALATION: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

INGESTION: Do not induce vomiting. Get medical attention immediately.

Section 5 — Fire Fighting Measures

FLASH POINT

See TABLE

LEL

1.1

UEL

6.1

EXTINGUISHING MEDIA - Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES - Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 — Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Remove all sources of ignition.

Ventilate the area. Remove with inert absorbent.

Section 7 — Handling and Storage

STORAGE CATEGORY - See TABLE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - Keep away from heat, sparks, and open flame.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition. Consult NFPA Code. Use approved Bonding and Grounding procedures. Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 — Exposure Controls/Personal Protection

PRECAUTIONS TO BE TAKEN IN USE - Use only with adequate ventilation. Avoid contact with skin and eyes. Avoid breathing vapor and spray mist. Wash hands after using.

These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m³ (total dust), 3 mg/m³ (respirable fraction), OSHA PEL 15 mg/m³ (total dust), 5 mg/m³ (respirable fraction).

VENTILATION - Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION - If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES - None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS - These products must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 — Physical and Chemical Properties

PRODUCT WEIGHT	See TABLE	EVAPORATION RATE	Slower than ether
SPECIFIC GRAVITY	1.12 - 1.70	VAPOR DENSITY	Heavier than air
BOILING POINT	293 °F	MELTING POINT	Not Available
VOLATILE VOLUME	0-30 %	SOLUBILITY IN WATER	Not Available

Section 10 — Stability and Reactivity

STABILITY - These products should be stored in cool areas (below 90 °F) away from sources of heat.

CONDITIONS TO AVOID - Storage in areas above 90 °F.

INCOMPATIBILITY - Avoid any contamination of body fillers with polymerization catalysts such as peroxides and strong acids. Do not put any mixed material back into the can of unmixed filler.

HAZARDOUS DECOMPOSITION PRODUCTS - By fire: Carbon Dioxide, Carbon Monoxide, Hydrogen Chloride

HAZARDOUS POLYMERIZATION - Will not occur

Section 11 — Toxicological Information

CHRONIC HEALTH HAZARDS - Styrene is listed by IARC as a possible human carcinogen based on "inadequate evidence" in humans, "limited evidence" in animals, and the fact that it is metabolized to styrene oxide, which has been shown to induce cancer in animals. However, studies of humans exposed for long periods of time to styrene have not demonstrated any carcinogenic effect.

Crystalline Silica (Quartz, Cristobalite) is listed by IARC and NTP. Long term exposure to high levels of silica dust, which can occur only when sanding or abrading the dry film, may cause lung damage (silicosis) and possibly cancer.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Section 12 — Ecological Information - No data available.

Section 13 — Disposal Considerations

WASTE DISPOSAL METHOD - Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste from unreacted body filler or unreacted hardener would be considered hazardous because it exhibits reactive characteristics under RCRA. Waste from unreacted body filler must be tested for ignitability to determine the applicable EPA hazardous waste number. Properly catalyzed body filler would not be considered a hazardous waste as defined by RCRA.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 — Transport Information - No data available.

Section 15 — Regulatory Information

CALIFORNIA PROPOSITION 65 - WARNING: These products, except for Cream Hardener, contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION - All chemicals in these products are listed, or are exempt from listing, on the TSCA inventory.

Section 16 — Other Information

These products have been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.



Close this window

MSDS

HMI 05-145

Common Name: 9100 SYSTEM 250 VOC IMMERSION ACT, 214430

Manufacturer: RUST-OLEUM

MSDS Revision Date: 4/30/2004

Grainger Item Number(s): 4TE22

Manufacturer Model Number(s): 214430

MSDS Table of Contents

Click the desired link below to jump directly to that section in the MSDS.

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MATERIAL SAFETY DATA SHEET

24 HOUR ASSISTANCE: 1-847-367-7700

RUST-OLEUM CORP.

WWW.RUSTOLEUM.COM

SECTION 1 - CHEMICAL PRODUCT / COMPANY INFORMATION



PRODUCT NAME: 9100 SYSTEM 250 VOC IMMERSION ACT

REVISION DATE: 04/30/2004

IDENTIFICATION NUMBER: 214430

PRODUCT USE/CLASS: IMMERSION ACTIVATOR/9100 SYSTEM

SUPPLIER:

RUST-OLEUM CORPORATION
11 HAWTHORN PARKWAY

VERNON HILLS, IL 60061
USA

MANUFACTURER:
RUST-OLEUM CORPORATION
11 HAWTHORN PARKWAY
VERNON HILLS, IL 60061
USA

PREPARER: DEPARTMENT, REGULATORY

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

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CHEMICAL NAME	CAS NUMBER	WEIGHT % LESS THAN
POLYAMIDE RESIN	68424-41-9	25.0
METHYL ACETATE	79-20-9	10.0
N-BUTANOL	71-36-3	10.0
XYLENE	1330-20-7	10.0
ETHYLBENZENE	100-41-4	5.0

CHEMICAL NAME	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
POLYAMIDE RESIN	N.E.	N.E.	N.E.	N.E.
METHYL ACETATE	200 PPM	250 PPM	200 PPM	N.E.
N-BUTANOL	25 PPM	100 PPM	100 PPM	N.E.
XYLENE	100 PPM	150 PPM	100 PPM	N.E.
ETHYLBENZENE	100 PPM	125 PPM	100 PPM	N.E.

SECTION 3 - HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW:

HARMFUL IF SWALLOWED. CAUSES EYE BURNS. CAUSES SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: CAUSES EYE BURNS.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT:

MAY CAUSE SKIN SENSITIZATION, AN ALLERGIC REACTION, WHICH BECOMES EVIDENT ON REEXPOSURE TO THIS MATERIAL. CONTACT CAUSES SKIN IRRITATION.

EFFECTS OF OVEREXPOSURE - INHALATION:

HIGH VAPOR CONCENTRATIONS ARE IRRITATING TO THE EYES, NOSE, THROAT AND LUNGS.

EFFECTS OF OVEREXPOSURE - INGESTION:

ASPIRATION HAZARD IF SWALLOWED; CAN ENTER LUNGS AND CAUSE DAMAGE. CAN BURN MOUTH, THROAT AND STOMACH.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS:

IARC LISTS ETHYLBENZENE AS A POSSIBLE HUMAN CARCINOGEN (GROUP 2B).

HIGH CONCENTRATIONS MAY LEAD TO CENTRAL NERVOUS SYSTEM EFFECTS (DROWSINESS, DIZZINESS, NAUSEA, HEADACHES, PARALYSIS, AND BLURRED VISION) AND/OR DAMAGE. OVEREXPOSURE TO XYLENE IN LABORATORY ANIMALS HAS BEEN ASSOCIATED WITH LIVER ABNORMALITIES, KIDNEY, LUNG, SPLEEN, EYE AND BLOOD DAMAGE AS WELL AS REPRODUCTIVE DISORDERS. EFFECTS IN HUMANS, DUE TO CHRONIC OVEREXPOSURE, HAVE INCLUDED LIVER, CARDIAC ABNORMALITIES AND NERVOUS SYSTEM DAMAGE.

PRIMARY ROUTE(S) OF ENTRY: SKIN ABSORPTION, INHALATION, EYE CONTACT

SECTION 4 - FIRST AID MEASURES

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FIRST AID - EYE CONTACT:

HOLD EYELIDS APART AND FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

FIRST AID - SKIN CONTACT:

REMOVE CONTAMINATED CLOTHING. WASH SKIN WITH SOAP AND WATER. GET MEDICAL ATTENTION.

FIRST AID - INHALATION:

REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET IMMEDIATE MEDICAL ATTENTION.

FIRST AID - INGESTION:

IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE VICTIM A GLASS OF WATER OR MILK. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION 5 - FIRE FIGHTING MEASURES

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FLASH POINT (SETAFLASH): 15 F

LOWER EXPLOSIVE LIMIT: 1.0%
UPPER EXPLOSIVE LIMIT: 16.0%

EXTINGUISHING MEDIA: DRY CHEMICAL, FOAM, WATER FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS:

COMBUSTION GENERATES TOXIC FUMES OF CARBON MONOXIDE, CARBON DIOXIDE AND OTHER GASES.

SPECIAL FIREFIGHTING PROCEDURES:

EVACUATE AREA AND FIGHT FIRE FROM A SAFE DISTANCE.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

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STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

CONTAIN SPILLED LIQUID WITH SAND OR EARTH, DO NOT USE COMBUSTIBLE MATERIALS SUCH AS SAWDUST. ISOLATE THE HAZARD AREA AND DENY ENTRY TO UNNECESSARY AND UNPROTECTED PERSONNEL.

SECTION 7 - HANDLING AND STORAGE

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HANDLING:

WASH THOROUGHLY AFTER HANDLING. USE WITH ADEQUATE VENTILATION. AVOID

PROLONGED OR REPEATED CONTACT WITH SKIN.

STORAGE:

KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS AND OPEN FLAME.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION



ENGINEERING CONTROLS:

USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION, OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW RECOMMENDED EXPOSURE LIMITS. PREVENT BUILD-UP OF VAPORS BY OPENING ALL DOORS AND WINDOWS TO ACHIEVE CROSS-VENTILATION.

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

SKIN PROTECTION:

NITRILE OR NEOPRENE GLOVES MAY AFFORD ADEQUATE SKIN PROTECTION. USE IMPERVIOUS GLOVES TO PREVENT SKIN CONTACT AND ABSORPTION OF THIS MATERIAL THROUGH THE SKIN.

EYE PROTECTION:

USE SAFETY EYEWEAR DESIGNED TO PROTECT AGAINST SPLASH OF LIQUIDS.

OTHER PROTECTIVE EQUIPMENT:

REFER TO SAFETY SUPERVISOR OR INDUSTRIAL HYGIENIST FOR FURTHER INFORMATION REGARDING PERSONAL PROTECTIVE EQUIPMENT AND ITS APPLICATION.

HYGIENIC PRACTICES:

REMOVE CONTAMINATED CLOTHING IMMEDIATELY AND LAUNDER BEFORE REUSE. WASH THOROUGHLY WITH SOAP AND WATER BEFORE EATING, DRINKING OR SMOKING.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES



BOILING RANGE: 133 - 415 F

VAPOR DENSITY: HEAVIER THAN AIR

ODOR: SOLVENT LIKE

ODOR THRESHOLD: ND

APPEARANCE: LIQUID

EVAPORATION RATE: SLOWER THAN ETHER

SOLUBILITY IN H2O: SLIGHT

FREEZE POINT: ND

SPECIFIC GRAVITY: 1.464

VAPOR PRESSURE: ND

pH: NE

PHYSICAL STATE: LIQUID

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: AVOID ALL POSSIBLE SOURCES OF IGNITION.

INCOMPATIBILITY:

INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG ACIDS AND STRONG ALKALIS.

HAZARDOUS DECOMPOSITION:

WHEN HEATED TO DECOMPOSITION IT EMITS ACRID SMOKE AND IRRITATING FUMES. BY OPEN FLAME, CARBON MONOXIDE AND CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

SECTION 11 - TOXICOLOGICAL INFORMATION

PRODUCT LD50: ND

PRODUCT LC50: ND

CHEMICAL NAME	LD50	LC50
POLYAMIDE RESIN	200 MG/KG	N.D.
METHYL ACETATE	>5000 MG/KG RAT	>16000 PPM 4 HR
N-BUTANOL	RAT 2500MG/KG	>8000 PPM (INH 4 HR, RAT)
XYLENE	N.D.	N.D.
ETHYLBENZENE	3500 MG/KG (ORAL, RAT)	N.D.

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: PRODUCT IS A MIXTURE OF LISTED COMPONENTS.

SECTION 13 - DISPOSAL INFORMATION

DISPOSAL INFORMATION:

DISPOSE OF MATERIAL IN ACCORDANCE TO LOCAL, STATE AND FEDERAL REGULATIONS AND ORDINANCES. DO NOT ALLOW TO ENTER STORM DRAINS OR SEWER SYSTEMS.

SECTION 14 - TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: PAINT RELATED MATERIAL

PACKING GROUP: II

DOT TECHNICAL NAME:

HAZARD SUBCLASS:

DOT HAZARD CLASS: 3

RESP. GUIDE PAGE: 126

DOT UN/NA NUMBER: 1263

SECTION 15 - REGULATORY INFORMATION**CERCLA - SARA HAZARD CATEGORY:**

THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA 'HAZARD CATEGORIES' PROMULGATED UNDER SECTIONS 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES:
IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD, FIRE HAZARD

SARA SECTION 313:

LISTED BELOW ARE THE SUBSTANCES (IF ANY) CONTAINED IN THIS PRODUCT THAT ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

CHEMICAL NAME	CAS NUMBER
N-BUTANOL	71-36-3
XYLENE	1330-20-7
ETHYLBENZENE	100-41-4

TOXIC SUBSTANCES CONTROL ACT:

LISTED BELOW ARE THE SUBSTANCES (IF ANY) CONTAINED IN THIS PRODUCT THAT ARE SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES:

U.S. STATE REGULATIONS: AS FOLLOWS-**NEW JERSEY RIGHT-TO-KNOW:**

THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP FIVE COMPONENTS IN THIS PRODUCT.

CHEMICAL NAME	CAS NUMBER
CALCIUM CARBONATE	1317-65-3

PENNSYLVANIA RIGHT-TO-KNOW:

THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%.

CHEMICAL NAME	CAS NUMBER
CALCIUM CARBONATE	1317-65-3

CALIFORNIA PROPOSITION 65:**WARNING:**

THE FOLLOWING INGREDIENTS PRESENT IN THE PRODUCT ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER:

CHEMICAL NAME	CAS NUMBER
MICROCRYSTALLINE SILICA	14808-60-7
LEAD COMPOUNDS	NOT SPECIFIED

CADMIUM COMPOUNDS NOT SPECIFIED

BENZENE 71-43-2

WARNING:

THE FOLLOWING INGREDIENTS PRESENT IN THE PRODUCT ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS, OR OTHER REPRODUCTIVE HAZARDS.

CHEMICAL NAME	CAS NUMBER
TOLUENE	108-88-3
LEAD COMPOUNDS	NOT SPECIFIED
CADMIUM COMPOUNDS	NOT SPECIFIED
BENZENE	71-43-2

INTERNATIONAL REGULATIONS: AS FOLLOWS-

CANADIAN WHMIS:

THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR THE USE OF THE 16 HEADINGS.

CANADIAN WHMIS CLASS:

B2
D2A
D2B

SECTION 16 - OTHER INFORMATION



HMIS RATINGS:

HEALTH 3
FLAMMABILITY 3
REACTIVITY 1
PERSONAL PROTECTION X

VOLATILE ORGANIC COMPOUNDS, G/L: 236

REASON FOR REVISION: REGULATORY UPDATE

LEGEND:

N.A. - NOT APPLICABLE
N.E. - NOT ESTABLISHED
N.D. - NOT DETERMINED

THE INFORMATION CONTAINED ON THIS MSDS HAS BEEN CHECKED AND SHOULD BE ACCURATE. HOWEVER, IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME EP MUDLUBE		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 100 GALLONS	
6. CONTAINER TYPE(S): R			
7. LOCATION NORTH PORTAL PAD GEOTECHNICAL BOREHOLES (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

HALLIBURTON

HMI 06-113

MATERIAL SAFETY DATA SHEET

Product Trade Name: **EP MUDLUBE®**

Revision Date: 16-Feb-2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: EP MUDLUBE®
Synonyms: None
Chemical Family: Organic hydrocarbon
Application: Lubricant

Manufacturer/Supplier: Baroid Drilling Fluids
a Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Compliance
Telephone: 1-580-251-4335

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Hydrotreated light petroleum distillate	64742-47-8	10 - 30%	200 mg/m ³	Not applicable

3. HAZARDS IDENTIFICATION

Hazard Overview: May cause eye, skin, and respiratory irritation. May cause headache, dizziness, and other central nervous system effects. Combustible.

4. FIRST AID MEASURES

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

Skin: Wash with soap and water. Get medical attention if irritation persists. Remove contaminated clothing and launder before reuse.

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion: Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

Notes to Physician: Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	146
Flash Point/Range (C):	63
Flash Point Method:	PMCC
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media	Carbon Dioxide, Dry Chemicals, Foam.
Special Exposure Hazards	Use water spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases.
Special Protective Equipment for Fire-Fighters:	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.
NFPA Ratings:	Health 1, Flammability 1, Reactivity 0
HMIS Ratings:	Flammability 1, Reactivity 0, Health 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Launder contaminated clothing before reuse. Wash hands after use. Do not open storage containers or enter confined spaces without adequate ventilation and respiratory protection due to hydrogen sulfide accumulation.
Storage Information	Store away from oxidizers. Store in a cool well ventilated area. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.
Respiratory Protection	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Organic vapor respirator.
Hand Protection	Impervious rubber gloves.
Skin Protection	Rubber apron.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Brown-black
Odor:	Acrid
pH:	4.5
Specific Gravity @ 20 C (Water=1):	0.94
Density @ 20 C (lbs./gallon):	7.8
Bulk Density @ 20 C (lbs/ft3):	Not Determined
Boiling Point/Range (F):	302
Boiling Point/Range (C):	150
Freezing Point/Range (F):	-4
Freezing Point/Range (C):	-20
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Insoluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (lbs./gallon):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	500-1000
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Oxides of sulfur. Carbon monoxide and carbon dioxide.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	May cause respiratory irritation. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.
Skin Contact	May cause skin defatting with prolonged exposure. Can dry skin.
Eye Contact	May cause eye irritation.
Ingestion	Irritation of the mouth, throat, and stomach. Aspiration into the lungs may cause chemical pneumonitis including coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.
Aggravated Medical Conditions	None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Other Information None known.

Toxicity Tests

Oral Toxicity: Not determined

Dermal Toxicity: Not determined

Inhalation Toxicity: Not determined

Primary Irritation Effect: Not determined

Carcinogenicity Not determined

Genotoxicity: Not determined

**Reproductive /
Developmental Toxicity:** Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air) Not determined

Persistence/Degradability Not determined

Bio-accumulation Not Determined

Ecotoxicological Information

Acute Fish Toxicity: TLM48: 181 mg/l (Arcatia tonsa)

Acute Crustaceans Toxicity: TLM96: 31900 ppm (Mysidopsis bahia) SPP @ 2 ppb

Acute Algae Toxicity: E(B)C50: 491 mg/l (Skeletonema costatum)

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging If empty container retains product residues, all label precautions must be observed. Store away from ignition sources. Transport with all closures in place. Return for reuse or disposal according to national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

DOT
Not restricted

DOT (Bulk)
Combustible Liquid, N.O.S., Combustible Liquid, NA1993, III
(Contains Petroleum Distillates)

Canadian TDG
Not restricted

ADR Not restricted

Air Transportation

ICAO/IATA Not restricted

Sea Transportation

IMDG
Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

US Regulations

US TSCA Inventory All components listed on inventory.

EPA SARA Title III Extremely Hazardous Substances Not applicable

EPA SARA (311,312) Hazard Class Acute Health Hazard
Fire Hazard

EPA SARA (313) Chemicals This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).

EPA CERCLA/Superfund Reportable Spill Quantity For This Product Not applicable.

EPA RCRA Hazardous Waste Classification If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

California Proposition 65 All components listed do not apply to the California Proposition 65 Regulation.

MA Right-to-Know Law Does not apply.

NJ Right-to-Know Law Does not apply.

PA Right-to-Know Law Does not apply.

Canadian Regulations

Canadian DSL Inventory Product contains one or more components not listed on inventory.

WHMIS Hazard Class B3 Combustible Liquids
D2B Toxic Materials

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>GO-JO HAND CLEANER</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>0.5 GALLONS</u>	
6. CONTAINER TYPE(S): <u>N</u>			
7. LOCATION <u>NORTH PORTAL PAD GEOTECHNICAL BOREHOLES (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Material Safety Data Sheet

HMI 05-040

[Home] [Manufacturer]

H.

SECTION - Material Identity

Item Name..... . 1115, 1116, 1117, 1120, 1129
 Part Number/Trade Name..... . GO-JOE HEAVY DUTY HAND CLEANER, 1107,
 1109, 1111, 1113, 1114
 National Stock Number.... . 8520010642725
 CAGE Code..... . 02905
 Part Number Indicator.... . A
 MSDS Number..... . 133050
 HAZ Code..... . A

SECTION II - Manufacturer's Information

Manufacturer Name. GO-JO INDUSTRIES INC
 P.O. Box..... . 991
 Street..... . 144 CUYAHOGA ST
 City..... . AKRON
 State..... . OH
 Country..... . US
 Zip Code..... . 44309-0991
 Emergency Phone... . 216-920-8100
 Information Phone. 216-920-8100

MSDS Preparer's Information

MSDS Preparer Name..... RONALD A WILLIAMS
 Date MSDS Prepared/Revised..... 30AUG90
 Date of Technical Review..... 31MAR92
 Active Indicator..... N

Alternate Vendors

Vendor #5 CAGE ... BMWKV

SECTION III - Physical/Chemical Characteristics

Hazard Storage Compatibility Code..... NK-
 Appearance/Odor..... WHITE OPAQUE GEL; PLEASANT ODOR
 Boiling Point..... 180F, 82C
 Melting Point..... N/A
 Vapor Pressure..... 10 @ 100F
 Vapor Density..... 4-5
 Specific Gravity..... 0.9 (H*20=1)

Decomposition Temperature.. N/K
 Evaporation Rate..... <1 (EE=1
 Solubility in Water..... SLIGHT
 Percent Volatiles by Volume N/K
 Chemical pH..... SUPDAT
 Corrosion Rate..... N/K
 Container Pressure Code.... 4
 Temperature Code..... 8
 Product State Code..... L

SECTION IV - Fire and Explosion Hazard Data

Flash Point..... 180
 Flash Point Method..... TCC
 Lower Explosion Limit..... 1.1%
 Upper Explosion Limit..... 6%
 Extinguishing Media..... ALCOHOL FOAM, CO*2, DRY CHEMICAL.
 Special Fire Fighting Procedures.. .. WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
 Unusual Fire/Explosion Hazards .. DENSE SMOKE MAY BE GENERATED DURING COMBUSTION. CO, CO*2, AND OTHER TOXIC OXIDES MAY BE GENERATED AS PRODUCTS OF COMBUSTION.

SECTION V - Reactivity Data

Stability..... YES
 Stability Conditions to Avoid..... NONE KNOWN.
 Materials to Avoid..... MAY REACT WITH STRONG OXIDIZING AGENTS
 Hazardous Decomposition Products..... NONE KNOWN.
 Hazardous Polymerization..... NO
 Polymerization Conditions to Avoid..... NOT RELEVANT
 LD50 - LD50 Mixture..... NONE SPECIFIED BY MANUFACTURER.

SECTION VI - Health Hazard Data

Route of Entry: Skin..... NO
 Route of Entry: Ingestion..... YES
 Route of Entry: Inhalation..... NO
 Health Hazards - Acute and Chronic..... EYE: IRRIT. SKIN: PRLNGD CONT MAY RESULT IN CONT DERM WHICH IS CHARACTERIZED BY DRYNESS, CHAPPING & REDDENING. INGEST: INGESTION OF SMALL QUANTITIES IS USUALLY NONFATAL UNLESS ASPIRATION OCCURS. ASPIRATION MAY LEAD TO CHEMICAL PNEUMONITIS WHICH IS CHARACTERIZED BY PULMONARY EDEMA & HEMORRHAGE & MAY BE FATAL.
 Carcinogenity NTP. . NO
 Carcinogenity IARC . YES

Carcinogenity: OSHA.....	NO
Explanation of Carcinogenity..	CAS NO.64742-55-8 IS LISTED BY THE RTECS AS AN IARC GROUP 1 CARCINOGEN.
Symptoms of Overexposure.....	--E HEALTH HAZARDS.
Medical Cond. Aggravated by Exposure	PREEXISTING SKIN OR RESPIRATORY CONDITIONS.
Emergency/First Aid Procedures	EYE: FLUSH W/WATER FOR AT LEAST 15 MIN, IF IRRIT PERSISTS CONTACT MD. INGEST: DO NOT INDUCE VOMITING, CONTAINS PETROLEUM DISTILLATES. IF VOMITING OCCURS, LOWER HEAD BELOW KNEES TO AVOID ASPIRATION. CONTACT MD OR POISON CONTROL CENTER IMMEDIATELY. INHAL: REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O*2/ARTIFICIAL RESPIRATION) CALL MD (FP N). SKIN: FLUSH W/COPIOUS AMTS OF WATER. CALL MD (FP N).

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	DO NOT ALLOW SPILL TO ENTER SEWERS/WATERCOURSES. REMOVE ALL SOURCES OF IGNIT & ALLOW FOR ADEQ VENT. ABSORB ONTO INERT ABSORB MEDIUM & COLLECT FOR DISPOSAL IN AN APPROVED CONTAINER. RINSE AREA WELL WITH WATER TO REDUCE POSS SLIPPERY FLOOR HAZARD.
Neutralizing Agent....	NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method.	DISPOSE I/A/W LOCAL, STATE AND FEDERAL REGULATIONS.
Handling and Storage Precautions	RE IN COOL AREA AWAY FROM HEAT, SPARKS, OPEN FLAME OR STRONG OXIDIZING MATERIALS. AV
Other Precautions...	AVOID EYE CONTACT AND PROLONGED SKIN CONTACT. KEEP OUT OF REACH OF CHILDREN.

SECTION VIII - Control Measures

Respiratory Protection.....	.. NONE REQUIRED IF USED AS DIRECTED.
Ventilation.....	.. NONE REQUIRED IF USED AS DIRECTED.
Protective Gloves.....	.. NONE REQUIRED IF USED AS DIRECTED.
Eye Protection.....	.. NONE REQUIRED IF USED AS DIRECTED
Other Protective Equipment.....	.. NONE REQUIRED IF USED AS DIRECTED
Work Hygenic Practices.....	.. ROUTINE.
Supplemental Health/Safety Data	.. PH: 8.6-9.6.
Disposal Code.....	.. O

SECTION IX - Label Data

Protect Eye.....	NO
Protect Skin.....	NO
Protect Respiratory	NO
Chronic Indicator..	UNKNOWN

Contact Code	SLIGHT
Fire Code...	UNKNOWN
Health Code.	UNKNOWN
React Code..	UNKNOWN

SECTION X - Transportation Data

Container Quantity	64
Unit of Measure...	OZF

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G)....	. 0
Volatile Organic Compounds (G/L)....	. 0

SECTION XII - Ingredients/Identity Information

Ingredient #...	... 01
Ingredient Name	... GLYCOLS, POLYETHYLENE, MONO(NONYLPHENYL) ETHER; (NONIONIC SURFACTANTS)
CAS Number.....	... 9016459
NIOSH Number.....	... MD0900000
Proprietary.....	... NO
Percent.....	... 3-7
OSHA PEL.....	... NOT APPLICABLE
ACGIH TLV.....	... NOT APPLICABLE
Recommended Limit..	... N/K
Ingredient #.....	... 02
Ingredient Name....	... PETROLEUM DISTILLATES CONTAINING INGREDIENTS 3 & 4.
CAS Number.....	... N/K
NIOSH Number.....	... 9999999ZZ
Proprietary.....	... NO
Percent.....	... 40-70
OSHA PEL.....	... NOT APPLICABLE
ACGIH TLV.....	... NOT APPLICABLE
Recommended Limit	... N/K
Ingredient #.....	... 03
Ingredient Name..	... STODDARD SOLVENT
CAS Number.....	... 8052413
NIOSH Number.....	... WJ8925000
Proprietary.....	... NO
Percent.....	... N/K
OSHA PEL.....	... 500 PPM
ACGIH TLV.....	... 100 PPM; 9293
Recommended Limit	... N/K
Ingredient #.....	... 04
Ingredient Name..	... MINERAL OIL, PETROLEUM DISTILLATES,

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HYDROTREATED LIGHT PARAFFINIC OIL MIST. PEL/TLV AS

CAS Number..... 64742558
NIOSH Number..... PY8036500
Proprietary..... NO
Percent..... N/K
OSHA PEL..... 5 MG/M3
ACGIH TLV..... 5 MG/M3; 10 STEL
Recommended Limit..... N/K
Ingredient #..... 05
Ingredient Name..... 1,2-PROPANEDIOL; (PROPYLENE GLYCOL)
CAS Number..... 57556
NIOSH Number..... TY2000000
Proprietary..... NO
Percent..... 1-5
OSHA PEL..... NOT APPLICABLE
ACGIH TLV..... NOT APPLICABLE
Recommended Limit..... N/K

NOTICE: For additional information, contact BIOENVIRONMENTAL

HMMS Intranet - 17 Mar 2005 18:38 - web_msdms.display - Visit the Official HMMS Website at

NON-CAS CHEMICALS

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3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>MAG AND ALUMINUM POLISH</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>20 FLUID OUNCES</u>	
6. CONTAINER TYPE(S): <u>N</u>			
7. LOCATION <u>NORTH PORTAL PAD GEOTECHNICAL BOREHOLES (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MOTHERS POLISHES-WAXES-CLEANERS

MAG & ALUMINUM POLISH Revised: 01/01/2001

14

MSDS Contents

HMI 05-041

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION
 PHYSICAL/CHEMICAL CHARACTERISTICS
 FIRE AND EXPLOSION HAZARD DATA
 REACTIVITY DATA
 HEALTH HAZARD DATA
 PRECAUTIONS FOR SAFE HANDLING AND USE
 CONTROL MEASURES

MATERIAL SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD
 29 CFR 1910.1200. STANDARD MUST BE CONSULTED FOR SPECIFIC REQUIREMENTS.

MOTHERS (R*) POLISHES-WAXES-CLEANERS
 5456 INDUSTRIAL DRIVE
 HUNTINGTON BEACH, CA. 92649

TELEPHONE NO FOR INFORMATION: 714-891-3364
 FAX NO.: 714-893-1827

DATE PREPARED: 1/1/01

PRODUCT MOTHERS MAG & ALUMINUM POLISH

PART NO

O5100
 O5101
 O5102
 O5104

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

HAZARDOUS COMPONENTS

(SPECIFIC CHEMICAL IDENTITY; COMMON NAME(S)	OSHA PEL	ACGIH TLV	OTHER LIMITS	§ (OPTIONAL)
KEROSENE CAS # 8008-20-6			500 P/M A	
SODIUM HYDROXIDE CAS # 1310732			2 MG/M3 B	

PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: N/D
 SPECIFIC GRAVITY (H2O=1) 0.833
 VAPOR PRESSURE (MM Hg) N/D
 MELTING POINT: 120 DEG. F

VAPOR DENSITY (AIR = 1): N/D
EVAPORATION RATE (BUTYL ACETATE = 1): N/D
SOLUBILITY IN WATER: DISPERSIBLE
APPEARANCE AND ODOR: WHITE PASTE, WITH PINE SCENT

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) 194 DEG F TAG O.C
EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL
SPECIAL FIRE FIGHTING PROCEDURES: TREAT AS SOLVENT FIRE
UNUSUAL FIRE AND EXPLOSION HAZARDS: N/D

REACTIVITY DATA

PART NO 5100

STABILITY
UNSTABLE
STABLE (X)

CONDITIONS TO AVOID:

INCOMPATIBILITY (MATERIALS TO AVOID):

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:

HAZARDOUS POLYMERIZATION
YES ()
NO (X)

CONDITIONS TO AVOID:

HEALTH HAZARD DATA

ROUTE(S) OF ENTRY
INHALATION? ()
SKIN? (X)
INGESTION? (X)

HEALTH HAZARDS (ACUTE AND CHRONIC)
NONE DETERMINED

CARCINOGENICITY: NONE ESTABLISHED
NTP?
IARC MONOGRAPHS?
OSHA REGULATED? NO

SIGNS AND SYMPTOMS OF EXPOSURE
NONE DETERMINED

<http://www.dolphinmde.com/online/loadMSDS.asp?sheetRecNum=1472064>

3/18/2005

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MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
NONE DETERMINED

EMERGENCY AND FIRST AID PROCEDURES

INGESTION:
DO NOT INDUCE VOMITING, CONTACT PHYSICIAN IMMEDIATELY.

EYE CONTACT:
WASH EYES THOROUGHLY FOR 15 MINUTES CONTACT PHYSICIAN IMMEDIATELY

PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
WASH DOWN WITH WATER THOROUGHLY.

WASTE DISPOSAL METHOD:
TREAT AS PETROLEUM BASED PRODUCT

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
AVOID PROLONGED SKIN CONTACT.

OTHER PRECAUTIONS:
WEAR GOGGLES & RUBBER GLOVES FOR PROLONGED USE.

CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE)

VENTILATION:
LOCAL EXHAUST ()
MECHANICAL (GENERAL) (X)

PROTECTIVE GLOVES:
RUBBER GLOVES

EYE PROTECTION
SAFETY GOGGLES

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
N/A

WORK/HYGIENIC PRACTICES:
WASH HANDS THOROUGHLY AFTER USE

NON-CAS CHEMICALS

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3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME 1411 THREAD SEALANT		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 2 PINTS	
6. CONTAINER TYPE(S): N			
7. LOCATION NORTH PORTAL PAD GEOTECHNICAL BOREHOLES (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Permatex, Inc.
 10 Columbus Blvd.
 Hartford, CT 06106 USA
 Telephone: 1-87-Permatex
 (877) 376-2839
 Emergency: 800-255-3924
 International Emergency: 813-348-0585

HMI 05-050

Material Safety Data Sheet

1. PRODUCT IDENTIFICATION

Product Name: 14D THREAD SEALANT WITH TEFLON 1PT
Item No: 80633
Product Type: Sealant

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percent	ACGIH 8 Hr. TWA:	OSHA 8 Hr. TWA:
2-PROPANOL 67-63-0	35-45	400 ppm TWA; 983 mg/m ³ TWA	400 ppm TWA
TALC 14807-96-6	20-30	2 mg/m ³ respir. dust TWA	2 mg/m ³ TWA
CASTOR OIL 8001-79-4	20-30	Not Listed	Not Listed
POLYVINYL RESIN 63148-65-2	1-10	Not Listed	Not Listed
TITANIUM DIOXIDE 13463-67-7	1-10	10 mg/m ³	10 mg/m ³ ; 15 mg/m ³ total dust
POLYTETRAFLUOROETHYLENE 9002-84-0	1-10	Not Listed	Not Listed

3. HAZARDS IDENTIFICATION

Toxicity: May cause eye, skin and respiratory irritation.
Primary Routes of Entry: Eye and skin contact, ingestion, inhalation.
Signs and Symptoms of Exposure: Excessive accidental exposure may cause headache, dizziness, nausea and mild respiratory irritation. Overexposure may cause eye and skin redness.

Ingredients	Percent	NTP:	ACGIH Carcinogens	IARC:
TITANIUM DIOXIDE 13463-67-7	1-10			Group 3; Vol 47, pg 307, 1989

Medical Conditions Recognized as Being Aggravated by Exposure: Preexisting eye, skin and respiratory disorders may be aggravated by overexposure to this product.

4. FIRST AID MEASURES

Ingestion: If swallowed, seek medical advice immediately and show this container or label
Inhalation: Move to fresh air in case of accidental inhalation of vapors Oxygen or artificial respiration if needed
 Obtain medical attention
Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes If skin irritation persists, call a physician
Eye Contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice

5. FIRE FIGHTING MEASURES

Flash Point (°F/C): 74 degrees F. Method: Tag Closed Cup
Recommended Extinguishing Media: Carbon Dioxide, Dry Chemicals, Foam.
Special Fire-Fighting Procedures: Firefighters should wear self-contained breathing apparatus. Water spray may be ineffective on flames but should be used to keep fire-exposed containers cool.
 Fluoride compounds
Hazardous Products Formed by Fire or Thermal Decomposition:
Unusual Fire/Explosion Hazards: Closed containers may rupture or explode when exposed to extreme heat.

Lower Explosive Limit: 2.3
Upper Explosive Limit: 12.7

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Eliminate all sources of ignition. Maintain good ventilation. Take up with an inert absorbent. Store in a closed waste container until disposal. Residues may be cleaned up with isopropyl alcohol.

7. HANDLING AND STORAGE

Storage: Store away from heat, sparks or open flame. Do not store at temperatures above 120 degrees F.
Handling: Avoid contact with skin and eyes. Do not inhale vapors. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eyes: Safety glasses.
Skin: Rubber or plastic gloves
Ventilation: Provide adequate ventilation
Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White paste
Odor: ALCOHOLIC
Boiling Point (°F): 180 degrees F.
pH: Does not apply
Solubility in Water: Partial
Specific Gravity: 1.12
VOC Content(Wt.%): 38.2% by weight; 341 g/l
Vapor Pressure: 33 mm Hg @ 68 degrees F.
Vapor Density (Air=1): 2.07
Evaporation Rate: 7.7 (ether = 1)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal conditions
Hazardous Polymerization: WILL NOT OCCUR
Incompatibilities: Strong oxidizers.
Conditions to Avoid: Keep away from heat, sparks and open flame.
Hazardous Products Formed by Fire or Thermal Decomposition: Fluoride compounds

11. TOXICOLOGICAL INFORMATION

See Section 3

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Recommended Method of Disposal: Disposal should be made in accordance with federal, state and local regulations.
US EPA Waste Number: D001 as per 40CFR 261.21

14. TRANSPORTATION INFORMATION

DOT (49CFR 172)

Domestic Ground Transport

DOT Shipping Name: Consumer Commodity (Not more than five liters)
Hazard Class: ORM-D
UN/ID Number: None
Marine Pollutant: None

IATA

Proper Shipping Name: Consumer Commodity
Class or Division: Class 9
UN/NA Number: ID 8000

IMDG

Product name: 14D THREAD SEALANT WITH TEFLON
1PT

Item 80633

Proper Shipping: Adhesives, Limited Quantity
Hazard Class: Class 3.3
UN Number: UN 1133

15. REGULATORY INFORMATION

SARA 313 Chemicals: The following component(s) is listed as a SARA Section 313 Toxic Chemical.

SARA 313 Information
NONE

CALIFORNIA PROP 65:
No California Prop 65 chemicals are known to be present.

TSCA Inventory Status:
Listed on Inventory: YES All components of this product are listed (or exempt) on the EPA TSCA inventory.

16. OTHER INFORMATION

Estimated NFPA Rating: HEALTH 2, FLAMMABILITY 3, REACTIVITY 0
Estimated HMIS Classification: HEALTH 2, FLAMMABILITY 3, PHYSICAL HAZARD 0
NFPA is a registered trademark of the National Fire Protection Assn.
HMIS is a registered trademark of the National Paint and Coatings Assn.

Prepared By: Denise Boyd, Health and Safety Manager
Company: Permatex, Inc. 10 Columbus Blvd. Hartford, CT USA
06106

Revision Date: 11/18/2003
Revision 2
Number:

Telephone Number: 1-87-Permatex . (877) 376-2839

NON-CAS CHEMICALS

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3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME 14 H THREAD SEALANT		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 16 FLUID OUNCES	
6. CONTAINER TYPE(S): N			
7. LOCATION NON-HAZARDOUS WASTE YARD (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Supplier:
 Permatex, Inc.
 10 Columbus Blvd.
 Hartford, CT 06106
 Telephone: 1-87-Permatex
 (877) 376-2839

94-095

Material Safety Data Sheet

1. PRODUCT IDENTIFICATION

Product Name: 14H THREAD SEALANT W/TEFLON .25PT
 Item No: 80632
 Product Type: Sealant

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percent	ACGIH 8 Hr. TWA:	OSHA 8 Hr. TWA:
2-PROPANOL 87-83-0	35-45	400 ppm TWA; 983 mg/m3 TWA	400 ppm TWA
TALC 14807-96-6	20-30	2 mg/m3 respir. dust TWA	2 mg/m3 TWA
CASTOR OIL 8001-79-4	20-30		
VINYL TERPOLYMER 27360-07-2	5-15	10 mg/m3 TWA total dust	15 mg/m3 TWA total dust; 5 mg/m3 respir dust
TITANIUM DIOXIDE 13463-67-7	1-10	10 mg/m3	15 mg/m3 total dust

3. HAZARDS IDENTIFICATION

Toxicity: May cause eye, skin and respiratory irritation.
 Primary Routes of Entry: Eye and skin contact, ingestion, inhalation.
 Signs and Symptoms of Exposure: Excessive accidental exposure may cause headache, dizziness, nausea and mild respiratory irritation. Overexposure may cause eye and skin redness.

Ingredients	Percent	NTP:	ACGIH Carcinogens	IARC:
TITANIUM DIOXIDE 13463-67-7	1-10			Group 3; Vol 47, pg 307, 1989

Medical Conditions Recognized as Being Aggravated by Exposure: Preexisting eye, skin and respiratory disorders may be aggravated by overexposure to this product.

4. FIRST AID MEASURES

Ingestion: If swallowed, DO NOT induce vomiting. Keep individual calm. Obtain medical attention.
 Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.
 Skin Contact: Remove contaminated clothing. Wash area with soap and water. If irritation persists, seek medical attention.
 Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

5. FIRE FIGHTING MEASURES

Flash Point (°F/C): 74 degrees F. Method: Tag Closed Cup
 Recommended Extinguishing Media: Carbon Dioxide, Dry Chemicals, Foam.
 Special Fire-Fighting Procedures: Firefighters should wear self-contained breathing apparatus. Water spray may be ineffective on flames but should be used to keep fire-exposed containers cool.
 Hazardous Products Formed by Fire or Thermal Decomposition: Fluoride compounds

Product Name: 14H THREAD SEALANT W/TEFLON .25PT
Item No: 80632

Unusual Fire/Explosion Hazards: Closed containers may rupture or explode when exposed to extreme heat.
Lower Explosive Limit: 2.3
Upper Explosive Limit: 12.7

6. ACCIDENTAL RELEASE MEASURES

Spill Procedures: Eliminate all sources of ignition. Maintain good ventilation. Take up with an inert absorbent. Store in a closed waste container until disposal. Residues may be cleaned up with isopropyl alcohol.

7. HANDLING AND STORAGE

Storage: Store away from heat, sparks or open flame. Do not store at temperatures above 120 degrees F.
Handling: Avoid contact with skin and eyes. Do not inhale vapors. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eyes: Safety glasses or goggles.
Skin: Rubber or plastic gloves
Ventilation: General; local exhaust ventilation as necessary to control any air contaminants to within their exposure limits during the use of this product.
Respiratory Protection: An approved respirator (i.e. NIOSH, etc.) should be worn when exposures are expected to exceed the applicable limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White paste
Odor: Alcohol Odor
Boiling Point (°F): 180 degrees F.
pH: Does not apply
Solubility in Water: Partial
Specific Gravity: 1.12
VOC Content(Wt.%): 37.9% by weight; 425.5 g/l
Vapor Pressure: 33 mm Hg @ 68 degrees F.
Vapor Density (Air=1): 2.07
Evaporation Rate: 7.7 (ether = 1)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal conditions
Hazardous Polymerization: WILL NOT OCCUR
Incompatibilities: Strong oxidizers.
Conditions to Avoid: Do not expose to heat or store at temperatures above 120 F.
Hazardous Products Formed by Fire or Thermal Decomposition: Fluoride compounds

11. TOXICOLOGICAL INFORMATION

See Section 3

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Recommended Method of Disposal: Disposal should be made in accordance with federal, state and local regulations.
US EPA Waste Number: D001 as per 40CFR 261.21

14. TRANSPORT INFORMATION

DOT (49CFR 172)
Domestic Ground Transport
DOT Shipping Name: Consumer Commodity (Not more than five liters)
Hazard Class: ORM-D
UN/ID Number: None

Product Name: 14H THREAD SEALANT W/TEFLON .25PT
Item No: 80632

Marine Pollutant: None
IATA
Proper Shipping Name: Consumer Commodity (Not more than 500 ml)
Class or Division: Class 9
UN/NA Number: ID 8000
IMDG
Proper Shipping: Adhesives, Limited Quantity
Hazard Class: Class 3.3
UN Number: UN 1133

15. REGULATORY INFORMATION

SARA 313 Chemicals: The following component(s) is listed as a SARA Section 313 Toxic Chemical.
NONE

CALIFORNIA PROP 65:
No California Prop 65 chemicals are known to be present.

TSCA Inventory Status:
All components of this product are listed (or exempt) on the EPA TSCA inventory.

16. OTHER INFORMATION

Estimated NFPA Rating: HEALTH 2, FLAMMABILITY 3, REACTIVITY 0
Estimated HMIS Classification: HEALTH 2, FLAMMABILITY 3, PHYSICAL HAZARD 0

NFPA is a registered trademark of the National Fire Protection Assn.
HMIS is a registered trademark of the National Paint and Coatings Assn.

Prepared By: Denise Boyd Health and Safety Manager
Company: Permatex, Inc. 10 Columbus Blvd. Hartford, CT 06106
Telephone Number: 1-87-Permatex (877) 376-2839
Revision Date: 03/02/2001

Revision Number: 1

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>MARVEL MYSTERY OIL</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>9 GALLONS</u>	
6. CONTAINER TYPE(S): <u>N</u>			
7. LOCATION <u>NORTH PORTAL PAD MECHANICS SHOP AND PAINTERS SHOP (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

94-016

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	Marvel Mystery Oil
PRODUCT CODE	MM007, MM010, MM011, MM012R, MM013R, MM014R, MM015, MM016, MM017, MM018, MM613
CHEMICAL FAMILY	Petroleum Distillates
CHEMICAL NAME	Complex Mixture of Hydrocarbons
FORMULA	Mixture
MANUFACTURER	EMERGENCY TELEPHONE NUMBERS
Marvel Oil Company, Inc 5655 W. 73 rd Street Chicago, IL 60638 Phone: 708-563-3766 Fax: 708-563-3715	Transportation: CHEMTREC: 800-424-9300 Medical: Contact Local Poison Control Center

2. POSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	CONCENTRATION (wt %)
Naphthenic Hydrocarbons	64742-52-5	70 - 80
Mineral Spirits	08052-41-3	20 - 30
Chlorinated Hydrocarbons	00095-50-1	0 - 1

EXPOSURE LIMITS 8 hrs. TWA(ppm)

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Naphthenic Hydrocarbons	5 as oil mist	5 as oil mist
Mineral Spirits	100	100
Chlorinated Hydrocarbons	25	25

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

INHALATION: Can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness and even asphyxiation.

INGESTION: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration into lungs can cause pneumonitis which can be fatal.

SKIN CONTACT: Prolonged or repeated contact can cause moderated irritation, defatting or dermatitis.

EYE CONTACT: Can cause severe irritation, redness, tearing or blurred vision.

4. **FIRST AID MEASURES**

EYE: Flush with large amounts of water, lifting upper and lower eyelids occasionally. Get medical attention.

SKIN: Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder before re-use.

INHALATION: Remove person to fresh air. If breathing difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm and quiet. Call a physician.

INGESTION: Do not induce vomiting. Keep person quiet and warm. Get medical attention. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

5. **FIRE FIGHTING MEASURES**

FLASH POINT: 128 ° F (53 ° C) TCC

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full facepiece operated with positive pressure-demand when fighting large fires.

6. **ACCIDENTIAL RELEASE MEASURES**

SPILL OR LEAK PROCEDURES: Ventilate area. Remove sources of ignition. Prevent entry into sewers and waterways. Pick up free liquid for recycle and/or disposal. Absorb small amounts on inert material for disposal.

7. **HANDLING AND STORAGE**

STORAGE TEMPERATURE (MIN./MAX.): -40 ° F (-40 ° C)/ 120 ° F (49 C)

SHELF LIFE: 3 years minimum when the original container is kept tightly closed and properly stored.

SPECIAL SENSITIVITY: None.

HANDLING AND STORAGE PRECAUTIONS: Empty containers may be dangerous since fumes may still exist. Observe precautions given for this product as stated in this document.

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

EYE PROTECTION REQUIREMENTS: Splash goggles.

SKIN PROTECTION REQUIREMENTS: Wear chemically resistant gloves.

RESPIRATOR/VENTILATION REQUIREMENTS: Provide sufficient ventilation to avoid exposure levels above the established TLV's.

EXPOSURE LIMITS: Not established for product as whole.

Mineral Spirits	NIOSH	100 ppm TWA
Oil Mist	OSHA	5 mg/m3

9. **PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL FORM: Thin liquid

COLOR: Red
ODOR: Wintergreen
BOILING POINT: Not determined
MELT / FREEZE POINT - 60 ° F (- 51 ° C)
PH: Not applicable
SOLUBILITY IN WATER: Insoluble
SPECIFIC GRAVITY: 0.876 @ 60 ° F (15.6 ° C)
% VOLATILE BY WEIGHT: 25 %
VAPOR PRESSURE: Not determined
VAPOR DENSITY: Not determined

10. **REACTIVITY**

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITIES: Strong oxidizing agents.

DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide and hydrocarbons.

11. **TOXICOLOGICAL INFORMATION**

ACUTE INHALATION: Aspiration into lungs can cause pneumonitis which can be fatal.

CHRONIC INHALATION: Not determined.

ACUTE SKIN CONTACT: Prolonged or repeated contact can cause moderate irritation, defatting or dermatitis.

CHRONIC SKIN CONTACT: Not determined.

ACUTE EYE CONTACT: Can cause severe irritation, redness, tearing or blurred vision.

12. **ECOLOGICAL INFORMATION**

No data available.

13. **DISPOSAL CONSIDERATIONS**

Ignitable hazardous waste, EPA Hazardous Waste Number D001

WASTE DISPOSAL METHOD: Dispose of product in accordance with all local, state and federal laws and regulations.

14. **TRANSPORT INFORMATION**

DOT INFORMATION:

PROPER SHIPPING NAME: Non Bulk Not regulated
Bulk Petroleum distillates, n.o.s.

TECHNICAL SHIPPING NAME: Fuel and oil additive

HAZARD CLASS: Non Bulk ORM-D
Bulk Class 3

UN NUMBER: UN 1268

PRODUCT RQ (lbs):

LABEL: Non Bulk ORM-D
Bulk Flammable Liquid

PLACARD: Non Bulk None
Bulk Flammable Liquid

FREIGHT CLASS BULK:

FREIGHT CLASS PACKAGE:

PRODUCT LABEL

15. **REGULATORY INFORMATION**

TSCA STATUS: All ingredients listed.

CERCLA REPORTABLE QUANTITY:

SARA TITLE III:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES

SECTION 311/312 HAZARD CATEGORIES

Acute Health	Yes
Chronic Health	Yes
Fire	Yes
Reactive	No
Sudden Release of Pressure	No

SECTION 313

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
Ortho-dichlorobenzene	00095-50-1	0 - 0.25 %

RCRA STATUS: If discarded in its purchased form, this product would be an ignitable waste with an EPA Hazardous Waste Number of D001. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product should be classified as a hazardous waste. (40CFR261.20-24)

CANADIAN STATUS: All materials contained in this product are listed on the Canadian Domestic Substances List.

EUROPEAN UNION: All materials contained in this product are listed on EINECS.

STATE REGULATORY INFORMATION

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

<u>COMPONENT/ CAS NUMBER</u>	<u>CONCENTRATION</u>	<u>STATE CODE</u>
p-dichlorobenzene 00106-46-7	less than 150 ppm	CA

CA = Material known to the state of California to cause cancer and/or birth defects. (California Proposition 65).

16. **OTHER INFORMATION**

HMIS CLASSIFICATION	Health	2
	Flammability	2
	Reactivity	0
NFPA RATING		B
	Health	2
		2
	Reactivity	0
	Special	None
MSDS PART NO.	1-5018-64-0	
REASON FOR ISSUE	Add MSDS Part No.	
PREPARED BY	Richard P. Kelly	
TITLE	Technical Manager	
APPROVAL DATE	March 11, 2003	
SUPERCEDES DATE	November 7, 2000	
REVISION NUMBER	#04	

This information is to the best of Marvel Oil Company's knowledge and belief, accurate and reliable. However, no representation, warranty, or guarantee is made to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.

Msdsmm005new.doc

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME FLUORO-LITE TP-3830		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 24 FLUID OUNCES	
6. CONTAINER TYPE(S): _____ _____			
7. LOCATION NORTH PORTAL PAD MECHANICS SHOP (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

TRACER PRODUCTS

MATERIAL SAFETY DATA SHEET

HMI 97-066

TP-3830

Effective: 09/24/04

Page 1

Supersedes: 08/13/03

Section 1. Identification of the Substance/Preparation and Company

PRODUCT NAME: TP-3830**DESCRIPTION:** Fluorescent Dye for Mobile AC&R Systems, R-12 Mineral Oil **USE:** Leak Detection**EMERGENCY TELEPHONE #:** 800-424-9300 (24 HOURS) CHEMTREC; Call collect outside continental U.S.: 703-527-3887.**PRODUCT INFORMATION:** Spectronics Corporation, 956 Brush Hollow Road, Westbury, NY 11590, 800-641-1133.

For calls originating outside continental U.S.: 516-333-1254.

Section 2. Composition/Information on Ingredients

Product	Common Name/Chemical Name	CAS Number	% W	PEL(mg/m ³)	TLV(mg/m ³)
TP-3830	Fluorescent Dye	See Below	5-25	NA	NA
	Lubricant Oil	See Below	75-95	5*	5*

Lubricant Oil: The specific identity has been withheld as a trade secret. New Jersey Trade Secret Registry Number NJ EIN 80100312-5001P.**Fluorescent Dye:** The specific identity has been withheld as a trade secret. New Jersey Trade Secret Registry Number NJ EIN 80100312-5000P.***Airborne Oil Mist Exposure Limits:** Lubricant OilACGIH TLV: 5 mg/m³, 8 hr ACGIH STEL: 10 mg/m³ OSHA PEL: 5 mg/m³, 8 hr

Section 3. Hazards Identification

EMERGENCY OVERVIEW: May cause eye, skin and respiratory system irritation.**Primary Routes of Exposure:** Eye. Skin. Inhalation (breathing).**Eye Contact:** Can cause mild irritation. **Skin Contact:** Irritation can occur following prolonged or repeated contact. **Inhalation (breathing):** Processing vapors can possibly cause irritation to the upper respiratory tract. **Ingestion (swallowing):** Ingestion can cause gastrointestinal irritation. **Aggravation of Existing Conditions:** A review of available data does not identify any worsening of any existing medical conditions.

Carcinogenicity:	ACGIH	IARC	NTP	OSHA
Fluorescent Dye	No	No	No	No
Lubricant Oil	No	No	No	No

HMIS HAZARD RATING: Health: 1, Fire: 1, Reactivity: 0.

Section 4. First-Aid Measures

Eye Contact: Flush eyes with water for 15 minutes. If irritation develops, consult a physician. **Skin Contact:** Wash affected area with soap and water. If irritation develops, consult a physician. **Inhalation (breathing):** Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration. **Ingestion (swallowing):** Call a physician immediately. Induce vomiting only as directed by medical personnel.

Section 5. Fire-Fighting Measures

Flash Point: Greater than 185°F (85°C); **Test Method:** SETAFLASH Closed Cup; **Explosive Limit:** LEL(%): Not Determined; UEL(%): Not Determined; **Autoignition Temperature:** Not Determined. **Unusual Fire and Hazardous Combustion and Decomposition Products:** Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). **Fire and Explosion Hazards:** May liberate irritating or toxic vapors during combustion or decomposition. **Extinguishing Media:** Based on the NFPA guide, use dry chemical, carbon dioxide, or alcohol foam suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material; **Fire-Fighting Procedures/Equipment:** Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved, positive-pressure, self-contained breathing apparatus (SCBA) and full protective clothing.

Section 6. Accidental Release Measures

Spill Containment and Recovery: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed dye and absorbent into a recovery or salvage drum for disposal. **Disposal:** Either incinerate or land fill in accordance with applicable local, state and federal regulations.

TRACER PRODUCTS

MATERIAL SAFETY DATA SHEET

TP-3830

Effective: 09/24/04

Page 2

Supersedes: 08/13/03

Section 7. Handling and Storage

Storage Conditions: Store in a cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight. Always keep containers tightly closed. **Personal Hygiene:** Wash thoroughly after handling, especially before eating, drinking, smoking, or using restroom facilities. **Empty Container Precautions:** Do not reuse empty container for any purpose.

Section 8. Exposure Controls/Personal Protection

Engineering Controls/Ventilation: Maintain airborne concentrations below the established exposure limits (see PEL and TLV in section 2) by providing adequate ventilation. General (dilution) ventilation should be acceptable. **Eye Protection:** Wear safety goggles. An eye wash facility should be readily available. **Skin Protection:** Wear protective clothing and appropriate impervious gloves. **Respiratory Protection:** Avoid breathing vapor and/or mist. If occupational exposure limits are exceeded wear NIOSH/OSHA approved equipment. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

Section 9. Physical and Chemical Properties

Appearance: Dark red; **Odor:** Light blend petroleum; **Physical State:** Liquid; **Specific Gravity (Water=1):** 0.88; **Vapor Pressure 68° F (20° C):** < 0.01 mmHg @ 20° C; **Vapor Density (Air=1):** > 5; **Percent Volatile by Volume (%):** 0; **Evaporation Rate (Butyl Acetate=1):** < 0.01; **Solubility in Water:** None; **pH:** Not Applicable; **Boiling Range:** > 300° F (150° C).

Note: The physical data presented above are typical values and should not be construed as a specification.

Section 10. Stability and Reactivity

Chemical Stability: Stable under normal conditions of storage and use; **Conditions to Avoid:** High temperatures. **Incompatibility with other Materials:** Oxidizers and reducers; **Hazardous Polymerization:** Will not occur. **Hazardous Decomposition Products:** Combustion may produce carbon monoxide and carbon dioxide.

Section 11. Toxicological Information

		Lubricant Oil	Fluorescent Dye*
Oral LD ₅₀	Rat	5000 mg/kg	>5000 mg/kg
Dermal LD ₅₀	Rabbit	Not available	>2000 mg/kg
Inhalation LC ₅₀	Rat	Not available	Not available
Eye Irritation	Rabbit	Not available	Slight to mild irritation
Skin Irritation	Rabbit	Not available	Mild irritation

*Fluorescent Dye: Negative results were obtained in the Ames test. Negative results were obtained in the micronucleus assay.

Section 12. Ecological Information

No data are available on this product.

Section 13. Disposal Considerations

Disposal: Dispose of in accordance with all local, state, and federal regulations. **General Statements:** Federal regulations may apply to empty container. State and/or local regulations may be different. **Special Instructions:** Be sure to contact the appropriate government environmental agencies if further guidance is required.

Section 14. Transport Information

DOT Shipping Name: Not Regulated; **DOT Label:** Not Applicable; **DOT Identification No.:** Not Applicable; Nonregulated shipments by air under 49 CFR, IATA/ICAO AND IMO.

TRACER PRODUCTS

MATERIAL SAFETY DATA SHEET

TP-3830

Effective: 09/24/04

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Supersedes: 08/13/03

Section 15. Regulatory Information

U.S. Federal Regulatory Information:

This product is not considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III Information:

Ozone-Depleting Chemicals: No regulated ingredients. **Section 302-Extremely Hazardous Substances:** No regulated ingredients. **Section 302-Reportable Quantity:** None. **Section 311/312-Hazard Categories:** Fire Hazard: Yes; Sudden Release of Pressure Hazard: No; Reactivity Hazard: No; Immediate (Acute) Health Hazard: Yes; Delayed (Chronic) Health Hazard: No. **Section 313-Toxic Chemicals:** No regulated ingredients. **TSCA:** The chemical components of this product are contained on the Section 8(B) Chemical Substance Inventory List (40 CFR 710). **CERCLA:** No regulated ingredients.

State Right-To-Know:

Pennsylvania - New Jersey R-T-K:

NAME	CAS NO. or NJ TSRN
Fluorescent Dye	EIN 80100312-5000P
Lubricant Oil	EIN 80100312-5001P

California - California Proposition 65: No regulated ingredients.

CONEG: Not Determined.

CEPA - NPRI: No regulated ingredients.

Section 16. Other Information

USER'S RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions (in addition to those described herein) are required. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the users to comply with all applicable federal, state and local laws and regulations.

NA = Not Available

End of Material Safety Data Sheet

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>ALLSTAR VORTEX BOWL AND BATHROOM</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. INVENTORY AMOUNT <u>36 GALLONS</u>	
6. CONTAINER TYPE(S): <u>N</u>			
7. LOCATION <u>NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

01-086

MATERIAL SAFETY DATA SHEET

SECTION I - IDENTITY AND RESPONSIBLE PARTY INFORMATION 325090165

Responsible Party: **Unisource Worldwide, Inc.** Product Name: **Allstar Vortex Non-Acid Disinfectant Bowl & Bathroom Cleaner**

Address: **133 Peachtree St. NE** Date Prepared: **5-10-99**
Atlanta, GA 30303

Emergency Telephone No. **1-888-660-6737** Prepared By **Regulatory Affairs Department**
And Other Information

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS #'s	OSHA PEL	ACGIH TLV	Other Limits Recommended	% Optional
*2-Butoxyethanol	111-76-2	25 ppm	25 ppm	N/A	< 2.5%
EDTA - Tetrasodium	64-02-8	N/A	N/A	N/A	< 2.5%
*2- (2-Ethoxyethoxy) Ethanol	111-90-0	N/A	N/A	N/A	< 2.5%

***THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS FOR SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.**

HMIS RATING - HEALTH: 1 FLAMMABILITY: 2 REACTIVITY: 0 PERSONAL PROTECTION EQPT: B

SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point: Approx. **212° F** Specific Gravity (H₂O = 1): **1.016**
Vapor Pressure (mm Hg): **N/E** Percent Volatile By Weight (%): **>95%**
PH (conc.): **11.5-12.5** Evaporation Rate (H₂O=1): **Approx 1**
Solubility in Water: **Complete** Appearance and Fragrance: **Blue Liquid / Floral Fragrance**

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) - **190°F TCC** Flammable Limits - **LEL - N/E UEL - N/E**

Extinguishing Media - **Water, CO₂, Foam or media suitable for surrounding fire.**

Special Fire Fighting Procedures - **Standard fire fighting procedures may be followed, including full protective gear, NIOSH approved self-contained breathing apparatus. Unusual Fire and Explosion Hazards - None Known**

SECTION V - PHYSICAL HAZARDS

Stability **Unstable** Conditions to Avoid - **None Known**
Stable X

Incompatibility (Materials to Avoid) - **Do not mix other chemicals.**

Hazardous Decomposition Products or By-products - **Thermal decomposition on burning may produce toxic vapors or gases.**

Hazardous **May Occur** Conditions to Avoid - **None Known**

Polymerization **Will not Occur X**

SECTION VI - HEALTH HAZARDS

Route(s) of Entry: **Inhalation? Skin? X Ingestion? X**

Health Hazards (1. Acute and 2. Chronic) - **1. ACUTE: Harmful if swallowed. Eye irritant. 2. CHRONIC: None Known**

Chemical Listed as Carcinogen **National Toxicology Program Yes No X** I.A.R.C. **Yes No X** OSHA **Yes No X**

Signs and Symptoms of Exposure - **Irritation or burning sensation. Medical Conditions Generally Aggravated by Exposure - May aggravate skin disorders or respiratory ailments.**

Emergency and First Aid Procedures - **EYE CONTACT: Flush immediately with water for 15 minutes. Get medical attention. SKIN CONTACT: Flush with water for 15 minutes. Remove and wash contaminated clothing. INGESTION: Rinse mouth with water. Then drink 1-2 glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.**

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled - **Wear appropriate protective equipment. If possible, contain spill and collect in approved container. Rinse affected area thoroughly with water. Keep product out of sewers or waterways. Hold for disposal.**

Waste Disposal Method - **Dispose of in accordance with local, state and Federal regulations. If possible, triple rinse container, and recycle.**

Precautions to be Taken in Handling and Storing - **Avoid contact with skin or eyes. Avoid breathing vapor, spray or mist. Store in original container, in cool dry place with adequate ventilation. Keep out of reach of children. Keep container tightly closed when not in use.**

Other Precautions - **Use only according to label directions. If unsure about safe use, contact your supervisor immediately.**

SECTION VIII - CONTROL MEASURES

Respiratory Protection (Specify Type) - **Not expected to be necessary under normal conditions of use. Where exposure cannot be adequately controlled by general or local ventilation, use appropriate respiratory protection to prevent over exposure. An approved dust/mist respirator would be recommended.**

Ventilation - **Local Exhaust - As Necessary Mechanical (General) - As Adequate Special - N/A Other - N/A**

Protective Gloves - **Water Impervious (Latex, Neoprene) Eye Protection - Chemical Resistant Goggles or Face Shield Other Protective Clothing or Equipment - Not Required**

Work/Hygiene Practices - **Follow OSHA mandated procedures. Never eat or smoke while working with chemicals. Good housekeeping practices apply. Wash thoroughly after handling.**

NOTICE: NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OF ANY OTHER NATURE, ARE MADE WITH RESPECT TO INFORMATION CONCERNING THE PRODUCT REFERRED TO IN THIS MATERIAL SAFETY DATA SHEET.

N/A (Not Applicable/Not Available) N/E (Not Established)

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME DISTILLED WHITE VINEGAR		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. INVENTORY AMOUNT 20 GALLONS	
6. CONTAINER TYPE(S): N			
7. LOCATION NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

02-008

Return to Chapter 17 Information Page

H J HEINZ – DISTILLED WHITE VINEGAR

MATERIAL SAFETY DATA SHEET

NSN: 895000N048492

Manufacturer's CAGE: 73137

Part No. Indicator: A

Part Number/Trade Name: DISTILLED WHITE VINEGAR

General Information

Company's Name: H.J. HEINZ CO.

Company's Street: 1062 PROGRESS ST.

Company's City: PITTSBURGH

Company's State: PA

Company's Country: US

Company's Zip Code: 15212-5990

Company's Emerg Ph #: 412-237-5118

Company's Info Ph #: 412-237-5119

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status: SMJ

Date MSDS Prepared: 13NOV92

Safety Data Review Date: 11FEB94

MSDS Serial Number: BVCGS

Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO

Ingredient: DILUTE ACETIC ACID (CH₃ COOH)

Ingredient Sequence Number: 01

NIOSH (RTECS) Number: 1010888AA

CAS Number: 8028-52-2

OSHA PEL: N/K (FP N)

ACGIH TLV: N/K (FP N)

Physical/Chemical Characteristics

Appearance And Odor: CLEAR LIQUID, ODOR OF VINEGAR

Boiling Point: 244F, 118C

Vapor Pressure (MM Hg/70 F): 11 MM

Vapor Density (Air=1): 2.1

Specific Gravity: 1.01

Evaporation Rate And Ref: NOT KNOWN

Solubility In Water: COMPLETE

pH: SUPDAT

Fire and Explosion Hazard Data

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).

Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomp Products: NONE SPECIFIED BY MANUFACTURER.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: PROLONGED INHALATION OF VAPORS CAN CAUSE

IRRITATION TO RESPIRATORY TRACT. EYES: WILL CAUSE EYE IRRITATION - SMARTING

AND REDDENING OF THE EYE.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT.

Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: INHAL:REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O*2/ARTF RESP) (FP N). SKIN:FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD (FP N). EYE:FLUSH IMMEDIATELY AND THOROUGHLY WITH WATER FOR AT LEAST 15-20 MINUTES (TIMED BY A CLOCK). CALL A PHYSICIAN. INGEST:LARGE AMOUNTS, WATER SHOULD BE CONSUMED TO DILUTE. DO NOT INDUCE VOMITING. DO NOT GIVE EMETICS OR BAKING SODA. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: IF VINEGAR IS SPILLED, WATER MAY BE USED TO DILUTE.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N).

Precautions-Handling/Storing: NONE SPECIFIED BY MANUFACTURER.

Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR

EXPOSURE OF CONCERN (FP N).

Ventilation: NONE SPECIFIED BY MANUFACTURER.

Protective Gloves: NONE SPECIFIED BY MANUFACTURER.

Eye Protection: NONE SPECIFIED BY MANUFACTURER.

Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: PH:2.2 @ 100 GRAIN.

Transportation Data

Disposal Data

Label Data

Label Required: YES

Technical Review Date: 11FEB94

Label Date: 11FEB94

Label Status: G

Common Name: DISTILLED WHITE VINEGAR

Chronic Hazard: NO

Signal Word: CAUTION!

Acute Health Hazard-Slight: X

Contact Hazard-Slight: X

Fire Hazard-None: X

Reactivity Hazard-None: X

Special Hazard Precautions: ACUTE:INHAL/EYES:IRRITATION. CHRONIC:NONE

SPECIFIED BY MANUFACTURER.

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: H.J. HEINZ CO.

Label Street: 1062 PROGRESS ST.

Label City: PITTSBURGH

Label State: PA

Label Zip Code: 15212-5990

Label Country: US

Label Emergency Number: 412-237-5118

NON-CAS CHEMICALS

The form is for reporting only the following materials:



1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME J-512 SANITIZER		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. INVENTORY AMOUNT 8 GALLONS	
6. CONTAINER TYPE(S): N			
7. LOCATION NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

J-512 SANITIZER

National Fire Protection Association (NFPA)	Fire Hazard	Hazardous Material Information System (HMIS)	Health	3
	Health		0	
		Reactivity	0	
	Specific Hazard			
Protective Clothing 	Emergency Overview	Clear Pink. Liquid. See Section 9. DANGER. CORROSIVE. CAUSES EYE AND SKIN BURNS. HARMFUL OR FATAL IF SWALLOWED.		

Section 1. Chemical Product and Company Identification			
Product Name	J-512 SANITIZER	Code	3759 & 3761 & 4398 & 4399 & 4401 & 3063541
Product Use	Industrial/Institutional: Sanitizer. This product is intended to be diluted prior to use.	PMS#	425901
MSDS#	113760003	Validation Date	5/6/2003
U.S. Headquarters Johnson Wax Professional 8310 16th Street Sturtevant, Wisconsin 53177-0902 Phone: (888) 352-2249 MSDS Internet Address: www.jwp.com	Canadian Headquarters Johnson Wax Professional 100 Matheson Blvd. East, Suite 203 Mississauga, Ontario L4Z 2G7 Phone: (905) 755-0913 or (888) 746-5971	Print Date	5/6/2003
		Supersedes	4/16/2003.
		In Case of Emergency	(800) 851-7145

Section 2. Composition and Information on Ingredients				
Ingredients	CAS #	% by Weight	Exposure Limits	LC50/LD50
n-Alkyl Dimethyl Benzyl Ammonium Chlorides	68391-01-5	1-5	Not available.	Not available.
n-Alkyl Dimethyl Ethylbenzyl Ammonium Chlorides	68956-79-6	1-5	Not available.	Not available.

Section 3. Hazards Identification	
Routes of Entry	Inhalation. Skin contact. Eye contact.
Potential Acute Health Effects	<p>Eyes Corrosive. May cause permanent damage including blindness.</p> <p>Skin Corrosive. May cause permanent damage.</p> <p>Inhalation May cause irritation and corrosive effects to nose, throat and respiratory tract.</p> <p>Ingestion Corrosive. May cause burns to mouth, throat, and stomach.</p>
Medical Conditions	Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be aggravated by overexposure: be more susceptible to irritating effects.
See Toxicological Information (section 11)	

Section 4. First Aid Measures	
Eye Contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Get medical attention immediately.
Skin Contact	Take off contaminated clothing. Flush immediately with plenty of water for at least 15 minutes. Get medical attention immediately.
Inhalation	If breathing is affected, remove to fresh air. If person is not breathing, call 911 or an ambulance and then give artificial respiration, preferably by mouth to mouth, if possible. Get medical attention immediately.

Ingestion	If ingested, call a physician or Poison Control Center immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Never give anything by mouth to an unconscious person.
Notes to Physician	Probable mucosal damage may contraindicate the use of gastric lavage.

Section 5. Fire Fighting Measures

Flammability of the Product	None known.
Flash Points	Closed cup: >93.333°C (200°F).
Products of Combustion	None known.
Fire Fighting Media and Instructions	Extinguish with water spray or carbon dioxide, dry chemical powder or appropriate foam. Normal fire fighting procedure may be used.
Protective Clothing (Fire)	Put on appropriate personal protective equipment (see Section 8).
Special Remarks on Fire and Explosion Hazards	Corrosive material (See sections 8 and 10).

Section 6. Accidental Release Measures

Personal Precautions	Put on appropriate personal protective equipment (see Section 8).
Environmental Precautions and Clean-up Methods	In the event of major spillage: Use appropriate containment to avoid environmental contamination. Sweep or scrape up material. Place in suitable clean, dry containers for disposal by approved methods. Use a water rinse for final clean-up.

Section 7. Handling and Storage

Handling	Avoid contact with eyes, skin and clothing. Remove and wash contaminated clothing and footwear before re-use. Wash thoroughly after handling. Avoid breathing vapors or spray mists. Product residue may remain on/in empty containers. All precautions for handling the product must be used in handling the empty container and residue. Do not taste or swallow. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.
Storage	Store in a dry, cool and well-ventilated area. Protect from freezing. Keep container tightly closed. KEEP OUT OF REACH OF CHILDREN.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Good general ventilation should be sufficient to control airborne levels. Respiratory protection is not required if good ventilation is maintained.
Personal Protection	
<i>Eyes</i>	Chemical splash goggles.
<i>Hands</i>	Chemical resistant gloves.
<i>Respiratory</i>	No specific personal protection equipment is required.
<i>Feet</i>	No specific personal protection equipment is required.
<i>Body</i>	If major exposure is possible, wear suitable protective clothing and footwear.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.
Odor	Bland.
Color	Clear Pink.
pH	6 to 8 [Neutral.]
Specific Gravity	1.02
Boiling/Condensation Point	>93°C (199.4°F)
Melting/Freezing Point	<0°C (32°F)
Solubility in water	Complete.

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	None known.
Incompatibility with Various Substances	None known.
Hazardous Decomposition Products	None known.
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

Acute toxicity	Corrosive. Acute oral toxicity (LD50): Estimated to be between 500 and 5000 mg/kg (rat).
Effects of Chronic Exposure	None known.
Other Toxic Effects	None known.

Section 12. Ecological Information

Not available.

Section 13. Disposal Considerations

Waste Information	Handle as a Pesticide waste. Do not bury, Do not dispose of with Commercial or Household waste. Dispose of according to all federal, state and local regulations.
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Section 14. Transport Information

DOT Classification

DOT Proper Shipping Name	Please refer to the Bill of Lading/receiving documents for up to date shipping information.
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TDG Classification

TDG Proper Shipping Name TDG Class	Please refer to the Bill of Lading/receiving documents for up to date shipping information.
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Section 15. Regulatory Information

Reporting in this section is based on ingredients disclosed in Section 2

US Regulations

This product is not subject to the reporting requirements under California's Proposition 65.

Registered Product Information EPA Registration Number: 1839-86-70627

Canadian Regulations

WHMIS Classification Exempt

WHMIS Icon

Registered Product Information Not applicable.

Chemical Inventory Status All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory

NON-CAS CHEMICALS

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3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME <u>ETHANOL 70%</u>		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT <u>12 LITERS OR 3.17 GALLONS</u>	
6. CONTAINER TYPE(S): <u>N</u>			
7. LOCATION <u>RECLAMATION STORAGE YARD (CONFIDENTIAL)</u>			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MATERIAL SAFETY DATA SHEET

ETHANOL 70 %
CAROLINA BIOLOGICAL SUPPLY COMPAN Y

Revised: 09/05/00
Replaces: None
Printed: 23/08/00

1. PRODUCT DESCRIPTION

Product Name: Ethanol, 70%
Product Code(s): 19-1093, 9 -1095, 9 -1104, 9 -1150, 9 -1152,
19-1225, 9 -1244, 9 -2220, L1715, L1705, L1710
9 -1105, 9 -1261, 9 -1263, 9 -1265, 9 -1184,
9 -1190, 9 -1192
Size: 500ml, 4L, 20L
Chemical Name: Does not apply, product is a mixture
CAS Number: Does not apply, product is a mixture
Formula: See Section 2
Synonyms: Alcohol, Ethyl alcohol
Distributor: Carolina Biological Supply Company
2700 York Road
Burlington, NC 2721

Chemical Information: 800-227-1150 (8a -5pm (ET)M -F)
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Principle Hazardous Components:

Ethyl alcohol (CAS#64-17-5) 66.5%
213 → Methyl isobutyl ketone (Denaturant) (CAS# 108-10-1) 2.7%
Hexane (Denaturant) (CAS#110-54-3) 0.8%

TLV and PEL units:

Ethyl alcohol: ACGIH-TLV 1000ppm (TWA)
OSHA-PEL 1000ppm (TWA)

Methyl isobutyl ketone: ACGIH-PEL 50 ppm (TWA), STEL 75 ppm;
OSHA-PEL 50 ppm (TWA), STEL 75 ppm

Hexane: ACGH -TLV 50 ppm (TWA), OSH -PEL 50 ppm (TWA)

3. HAZARD IDENTIFICATION

Emergency Overview: Concentrations below 1,000 ppm usually produce no signs of intoxication. Exposure to concentrations over 1,000 ppm may cause headache, irritation of the eyes, nose, and throat, and if continued for an hour, drowsiness and lassitude, loss of appetite and inability to concentrate.

Potential Health Effects

Eyes: May cause irritation

Skin: May cause irritation

Ingestion: May cause gastrointestinal discomfort

Inhalation: May cause irritation to respiratory tract.

4. FIRST AID MEASURES

Emergency and First Aid Procedures:

Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists

Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse.

Get medical attention if irritation persists

Ingestion - If swallowed, if conscious, give plenty of water.

Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person

MATERIAL SAFETY DATA SHEET

ETHANOL 70 %
CAROLINA BIOLOGICAL SUPPLY COMPANY

Revised: 09/05/00
Replaces: None
Printed: 23/08/00

Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

5. FIREFIGHTING PROCEDURES

Flash Point (Method Used): (cc) 55.6F - Ethyl alcohol

NFPA Rating: Health: 0
Fire: 3
Reactivity: 0

Extinguisher Media:

Use dry chemical, CO2 or appropriate foam.

Flammable Limits in Air % by Volume: Ethyl alcohol: LEL 3.3%, UEL -19%

Autoignition Temperature: Ethyl alcohol -793F

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Extremely flammable. Vapors are heavier than air and can travel distances to ignition source and flash back.

6. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition.

Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

7. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling or Storing: This material should be kept in an area suitable for the storage of flammable liquids. Bond and ground containers when transferring liquid.

Other Precautions: Keep oxidizing materials and strong acids away.

Wear splash-proof chemical safety goggles and rubber gloves at all times during cleanup process.

8. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust: Yes
Mechanical (General): Yes
Special: No
Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab coat, eye wash, and safety shower.

MATERIAL SAFETY DATA SHEET

ETHANOL 70 %
CAROLINA BIOLOGICAL SUPPLY COMPAN Y

Revised: 09/05/00
Replaces: None
Printed: 23/08/00

9. PHYSICAL DATA

Molecular Weight: No information available
Melting Point: No information available
Boiling Point: No information available
Vapor Pressure: No information available
Vapor Density(Air=1): No information available
Specific Gravity(H2O=1): Less than 1
Percent Volatile by Volume: 100%
Evaporation Rate(H2O=1): Greater than 1
Solubility in Water: 100%
Appearance and Odor: Clear liquid, fruity odor

10. REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Heat, sparks, open flame
Incompatibility(Materials to Avoid): Strong oxidizing agents.
Hazardous Decomposition Products: Carbon dioxide. Carbon monoxide
Hazardous Polymerization: Will not occur

11. TOXICITY DATA

Toxicity Data: To the best of our knowledge, the toxicological properties of this mixture have not been thoroughly evaluated. Data is listed for individual components.

Ethyl alcohol: orl-rat LD50: 7.060 mg/kg. ihl-rat LC50: 20,000 ppm/10H
Methyl isobutyl ketone: orl-rat LD50: 5.080 mg/kg. ihl-rat LC50: 8.000 ppm/4H

Hexane: orl-rat LD50: 28.710 mg/kg, ihl-hmn TCLo: 5.000 ppm/10M

Effects of Overexposure:

Acute: See section 3

Chronic: Ethyl alcohol: Mutation data cited. Reproductive effects data cited. Turmorigenic data cited. Not listed as causing cancer by IARC, NTP, or OSHA.

Methyl isbutyl ketone: No chronic effects data found. Not listed as causing cancer by IARC, NTP, or OSHA.

Hexane: Mutation data cited. Reproductive effects data cited. Not listed as causing cancer by IARC, NTP, or OSHA.

Conditions Aggravated by Overexposure: Pre-existing conditions of the skin, eyes, throat, liver.

Target Organs: Skin, eyes, nose, throat

Primary Route(s) of Entry: Ingestion, inhalation

12. ECOLOGICAL DATA

EPA Waste Numbers: Methyl isobutyl ketone (U161) is considered a hazardous waste if and when it is discarded.

13. DISPOSAL INFORMATION

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

14. TRANSPORT INFORMATION

Description: Ethanol solutions, 3, UN1170, II

MATERIAL SAFETY DATA SHEET

ETHANOL 70%
CAROLINA BIOLOGICAL SUPPLY COMPANY

Revised: 09/05/00
Replaces: None
Printed: 23/08/00

15. REGULATORY INFORMATION

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Name	Chemical List Category		
Ethyl alcohol	No	No	No	No	No
Methyl isobutyl ketone	No	Yes	No	5000	Yes
Hexane	No	No	No	No	No

16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists
CAS Number..Chemical Services Abstract Number
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act
DOT.....U.S. Department of Transportation
IARC.....International Agency of Research on Cancer
N/A.....Not Available
NTP.....National Toxicology Program
OSHA.....Occupational Safety and Health Administration
PEL.....Permissible Exposure Limit
ppm.....parts per million
RCRA.....Resource Conservation and Recovery Act
SARA.....Superfund Amendments and Reauthorization Act
TLV.....Threshold Limit Value
TSCA.....Toxic Substances Control Act

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME EPOXILURE HARDENER		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 0.5 PINTS	
6. CONTAINER TYPE(S): F			
7. LOCATION CENTRAL SUPPORT AREA BUILDING 4320 (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

M A T E R I A L S A F E T Y D A T A S H E E T

 =====
 | SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION |
 =====

PRODUCT NAME : BUEHLER EPOXICURE HARDENER
 IDENTIFICATION NUMBER: 20-8132-008, 20-8132-032 (20-8133-001)
 PRODUCT USE/CLASS : Epoxy hardener

SUPPLIER:

Buehler, Ltd.
 41 Waukegan Road

Lake Bluff, IL 60044

EMERGENCY: 800-424-9300

INFORMATION: 847-295-6500

PREPARER: Technical Department, PHONE: 847-295-6500,

PREPARE DATE: 12/20/04; 20 Dec 04

 =====
 | SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS |
 =====

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT%
01	Alkyl ether amine	39423-51-3	10.0-30.0
02	Diethylenetriamine	111-40-0	10.0-30.0
03	Triethylenetetramine	112-24-3	10.0-30.0
04	Polyethyleneamine epoxy adduct	unknown	30.0-60.0

EXPOSURE LIMITS

ITEM	ACGIH		OSHA		COMPANY	SKIN
	TLV-TWA	TLV-STEL	PEL-TWA	PEL-CEILING	TLV-TWA	
01	N.E.	N.E.	N.E.	N/E	N.E.	NO
02	1 ppm	N.E.	1 ppm	N/E	1ppm NIOSH	YES
03	N.E.	N.E.	N.E.	N/E	N.E.	NO
04	N.E.	N.E.	N.E.	N/E	N.E.	NO

(See Section 16 for abbreviation legend)

 =====
 | SECTION 3 - HAZARDS IDENTIFICATION |
 =====

EMERGENCY OVERVIEW: Harmful if absorbed through skin. Harmful if inhaled or swallowed. Causes skin and eye burns. Vapors extremely irritating to eyes and respiratory tract. May cause allergic skin reaction. May cause allergic respiratory reaction.

ACUTE EFFECTS - EYE CONTACT: CORROSIVE to the eyes and may cause severe damage including blindness. Product vapor can cause lacrimation, conjunctivitis, and corneal edema when absorbed into the tissue of the eye. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. The effect is transient and has no known residual effect.

ACUTE EFFECTS - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Strong skin sensitizer. CORROSIVE. Contact may cause chemical burns and blistering.

ACUTE EFFECTS - INHALATION: Liquid aspirated into lungs may cause serious injury or death. Potential respiratory sensitizer. Prolonged or very high overexposure may cause burns to the mucous membranes with severe pneumonitis.

Continued on Page 2)

SECTION 3 - HAZARDS IDENTIFICATION

ACUTE EFFECTS - INGESTION: Moderately toxic. Can burn mouth, throat and stomach, with nausea, severe pain, and vomiting.

CHRONIC OVEREXPOSURE EFFECTS: *Triethylenetetramine (TETA) caused embryofetal toxicity and fetal malformations when fed to pregnant rats. Similar effects were not seen in studies in which this material was applied to the skin of rabbits, a more relevant route of industrial exposure. These effects are believed to be secondary to copper deficiency, resulting from the chelating activity of the amine. *Preexisting pulmonary and dermatological disorders may be aggravated by exposure to hazardous components. *Prolonged or repeated overexposure may cause lung damage.

OTHER INFORMATION: No information.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT, SKIN ABSORPTION, INHALATION, INGESTION, EYE CONTACT,

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes immediately examined and tested by medical personnel.

SKIN CONTACT: Immediately wash skin with plenty of soap and water while removing contaminated clothing and shoes. GET MEDICAL ATTENTION. Contaminated clothing and leather articles should be disposed of in a manner which limits further exposure.

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

INGESTION: If swallowed, do NOT induce vomiting. Give victim a glass of water or milk. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: Treat symptomatically. If swallowed, gastric lavage is indicated.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: 215 F LOWER EXPLOSIVE LIMIT: N.A.
(PENSKY-MARTENS C.C.) UPPER EXPLOSIVE LIMIT: N.A.
AUTOIGNITION TEMPERATURE: No data
EXTINGUISHING MEDIA:ALCOHOL FOAM,CO2, DRY CHEMICAL, FOAM,WATER FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may rupture or explode (due to pressure build-up) when exposed to extreme heat. Irritating and/or toxic gases or fumes may be generated by thermal decomposition or combustion.

SPECIAL FIREFIGHTING PROCEDURES: Use NIOSH-approved self-contained breathing apparatus and full protective clothing. Use water to cool exposed containers. Water stream directed into fire may cause frothing with subsequent spread of flame.

Continued on Page 3)

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear appropriate protective equipment during cleanup. Absorb with inert material, such as clay. Sweep or shovel into loosely-covered waste container and remove to appropriate waste area. Dispose of in accordance with federal, state, and local regulations. Decontaminate or dispose of contaminated clothing and articles. Wash spill area with soap and water.

SECTION 7 - HANDLING AND STORAGE

HANDLING: Wash thoroughly after handling. Use with adequate ventilation. Do not get in eyes, on skin or clothing. DO NOT take internally. FOR INDUSTRIAL USE ONLY.

STORAGE: Keep container closed when not in use. KEEP OUT OF THE REACH OF CHILDREN.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust as needed to control vapor or dust levels to below lowest component TLV.

RESPIRATORY PROTECTION: None normally required under general ventilation. If TLV/PEL is exceeded, if use is performed in a poorly-ventilated space, or if inhalation effects occur, use NIOSH-approved vapor cartridge respirator in accordance with applicable health and safety regulations and manufacturer's recommendations.

SKIN PROTECTION: Clean clothing to cover skin. Butyl rubber gloves. Neoprene gloves.

EYE PROTECTION: Chemical splash goggles. Face shield.

OTHER PROTECTIVE EQUIPMENT: Accessible eye wash and safety shower.

HYGIENIC PRACTICES: Follow good general industrial safety practices during use. Do not smoke or eat during use. Wash after handling. DO NOT reuse empty containers. Follow all MSDS/label precautions even after container is emptied.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE	: 278 - 404 F	VAPOR DENSITY	: Is heavier than air
ODOR	: Ammonia like	ODOR THRESHOLD	: No data
APPEARANCE	: Clear	EVAPORATION RATE:	Is slower than Butyl Acetate
SOLUBILITY IN H2O	: Appreciable	SPECIFIC GRAVITY:	1.0363
FREEZE POINT	: No data	pH @ 0.0 %	: ALK
VAPOR PRESSURE	: No data	VISCOSITY	: Low
PHYSICAL STATE	: Liquid		
COEFFICIENT OF WATER/OIL DISTRIBUTION: No data			
(See Section 16 for abbreviation legend)			

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: No information.

Continued on Page 4)

SECTION 10 - STABILITY AND REACTIVITY

INCOMPATIBILITY: Strong Lewis or mineral acids. Strong bases or oxidants. Reaction with epoxy resins and isocyanates in large amounts or under uncontrolled conditions releases considerable heat and may release acrid fumes. Reaction with some nitrates or nitrites can cause the formation of cancer-causing nitrosoamines.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon. Oxides of nitrogen, ammonia. Irritating aldehydes and ketones.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
STABILITY: This product is stable under normal storage conditions.

SECTION 11 - TOXICOLOGICAL PROPERTIES

COMPONENT TOXICOLOGICAL INFORMATION:

CHEMICAL NAME	LD50	LC50
Alkyl ether amine	derm(rbt) 614mg/kg	No deaths satd air
Diethylenetriamine	skin(rbt) 1090mg/kg	No information
Triethylenetetramine	derm(rbt) 805mg/kg	No information
Polyethyleneamine epoxy adduct	No information	No information

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL TEST DATA: No information.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Review all current federal, state, and local regulations regarding health and disposal for appropriate disposal procedures. FOR SMALL AMOUNTS: If resin and hardener are available, mix and cure in accordance with product directions. When cured, product is non-hazardous, and may be placed in industrial or municipal landfill if local regulations permit. FOR LARGE AMOUNTS: Product disposed of "as sold" is not considered a hazardous waste under Federal RCRA regulations. Fuels blending recommended for free liquid if state and local regulations permit.

TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: Polyamines, Liquid, nos
DOT TECHNICAL NAME: (Diethylenetriamine, Triethylenetetramine)
DOT HAZARD CLASS: 8, CORROSIVE HAZARD SUBCLASS: NA
DOT UN/NA NUMBER: UN2735 PACKING GROUP: II RESP. GUIDE PAGE: 153

INTERNATIONAL SHIPPING NAME: Polyamines, liquid, nos (Diethylenetriamine, Triethylenetetramine)

INTERNATIONAL ID NUMBER: UN2735
IMDG CLASS (1°, 2°): 8, none PACKING GROUP: II
IMDG EMS: 808 IATA CLASS (1°, 2°): 8, none

SECTION 15 - REGULATORY INFORMATION

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

Continued on Page 5)

SECTION 15 - REGULATORY INFORMATION

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 and 40 CFR part 372: none

CERCLA - SARA HAZARD CATEGORY:

This product has been reviewed, and is considered, under applicable definitions, to meet the following categories:
IMMEDIATE HEALTH HAZARD CHRONIC HEALTH HAZARD

TOXIC SUBSTANCES CONTROL ACT:

The chemical substances in this product are on the TSCA Section 8 Inventory.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

----- CHEMICAL NAME ----- CAS NUMBER

No components found.

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product: none

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%: none

CALIFORNIA PROPOSITION 65:

No Proposition 65 chemicals known to exist in this product.

VOLATILE ORGANIC COMPOUNDS (VOCS): 0 grams/ltr

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for use of the 16 headings.

CANADIAN WHMIS CLASS: D2A, E

COMPONENT RCRA CLASSIFICATIONS: Not regulated

COMPONENT RCRA CODES: No information.

CERCLA RQ VALUE (MINIMUM): None known

SECTION 16 - OTHER INFORMATION

HMIS RATINGS - HEALTH: 3 FLAMMABILITY: 1 REACTIVITY: 0

PREVIOUS MSDS REVISION DATE: 04/14/03

REASON FOR REVISION: revise Section(s): 2,11

LEGEND: N.A. - No information, N.E. - Not Established,

N.D. - Not Determined

ABBREVIATIONS: ACGIH = American Conference of Governmental Industrial Hygienists; OSHA = US Occupational Health and Safety Administration; UK = United Kingdom; TLV-TWA = Threshold Limit Value-Time Weighted Average (8 hrs); STEL = Short-Term Exposure Limit (15 min); C = Ceiling Value; PEL = Permissible Exposure Limit

DISCLAIMER: To the best of our knowledge, the information contained in this MSDS is accurate or is obtained from sources believed to be accurate. However, no liability, expressed or implied, is assumed for the accuracy or completeness of the information contained herein. Buyer assumes liability in its use of the material.

<END OF MSDS>

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME CUTTER INSECT REPELLENT		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 4 GALLONS	
6. CONTAINER TYPE(S): N			
7. LOCATION: NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Spectrum
 Division of United Industries Corp.
 P.O. Box 142642
 St. Louis, MO 63114-0642

HMI 05-079

Hazardous Material Identification System-(HMIS)

HEALTH - 2

REACTIVITY - 0

FLAMMABILITY - 2

PERSONAL - None

Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

I Trade Name: Unscented Cutter Outdoorsman Insect Repellent II Pump Spray														
Product Type: Insect Repellent														
Product Item Number: 30090.1		Formula Code Number: 21-0377												
EPA Registration Number	Manufacturer	Emergency Telephone No.												
121-34	Chemisco 8494 Chapin Industrial Dr. St. Louis, MO 63114	For Chemical Emergency: 1-800-633-2873 For Information: 1-800-332-5553 Prepared by: Charlie A. Duckworth Date Prepared: August 27, 2001												
Hazardous Ingredients/Identity Information		III Physical and Chemical Characteristics												
<table border="1"> <thead> <tr> <th>Chemical</th> <th>%</th> <th>OSHA PEL</th> <th>ACGIH TLV</th> </tr> </thead> <tbody> <tr> <td>N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3</td> <td>23</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>SDA-40 Ethanol CAS #64-17-5</td> <td>44</td> <td>NA</td> <td>1000 ppm</td> </tr> </tbody> </table>	Chemical	%	OSHA PEL	ACGIH TLV	N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3	23	NA	NA	SDA-40 Ethanol CAS #64-17-5	44	NA	1000 ppm	Appearance and Odor: Clear, colorless or pale yellow liquid with ethanolic odor. Boiling Point: 75°C Vapor Pressure: 43mm @ 20°C Specific Gravity: 0.861 @ 72°F(H ₂ O=1) Vapor Density: 1.6 (Air=1) % Volatile (by vol.): 73 Solubility in Water: Not known Evaporation Rate: approx. 1 (BuOAc=1)	
Chemical	%	OSHA PEL	ACGIH TLV											
N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3	23	NA	NA											
SDA-40 Ethanol CAS #64-17-5	44	NA	1000 ppm											
IV Fire and Explosion Hazard Data		V Reactivity Data												
Flash Point: 81-85°F(PMCC) Flame Extension: N/A Autoignition Temp.: 793°F Fire Extinguishing Media: CO ₂ , Foam, Dry Chemical Decomposition Temp.: N/A Special Fire-Fighting Procedures: For small fires: Use CO ₂ , or dry chemical extinguishers. For large fires: Use copious amounts of water. Unusual Fire and Explosion Hazards: See section VII.		Stability: Stable Polymerization: Will not occur Conditions to Avoid: None Incompatible Materials: May soften or damage some synthetics such as rayon. May damage leather. Hazardous Decomposition or Byproducts: None												
VI Health Hazard Data		VII Precautions for Safe Handling and Use												
Ingestion (Swallowing): Harmful if swallowed. First Aid: Consult a physician or poison control. If conscious, give one or two glasses of water and induce vomiting. <u>Do not</u> induce vomiting or give anything by mouth to an unconscious person. Eye Contact: May cause eye injury. First Aid: Flush eyes with plenty of water for 15 minutes. Get medical attention. Skin Contact: If skin reaction occurs, wash with soap and water. Get medical attention if irritation persists. Special Notes: Apply only to skin or clothing. Do not ingest. Keep out of eyes. Frequent reapplication or saturation is unnecessary Health Conditions Aggravated by Exposure: None Known Ingredients listed by NTP, OSHA or IARC as Carcinogens or potential carcinogens: None		Steps to be Taken in Case Material is Released or Spilled: Flammable material. Remove all possible ignition sources. Wipe up with absorbent material. Wash small quantities away with soapy water. Prevent bulk quantities from entering open sewers and waterways. Waste Disposal: This material is flammable and must be disposed of in accordance with Local, State and Federal regulations. Do not reuse empty container; dispose of properly. Handling & Storage Precautions: Keep away from heat, sparks, or open flame. Do not expose treated skin to fire sparks or flame until liquid has dried.												
VIII Control Measures		IX Transportation Data												
Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.		DOT Shipping Name - Not Regulated by DOT DOT Hazard Class - None												

The information and statements herein are believed to be reliable but are not to be construed as 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.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME SCOTCH GRIP 4323		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. INVENTORY AMOUNT 1.25 GALLONS	
6. CONTAINER TYPE(S): Z			
7. LOCATION NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MATERIAL SAFETY DATA SHEET
 3M
 3M Center
 St. Paul, Minnesota
 55144-1000
 HMI 05-069
 1-800-364-3577 or (651) 737-6501 (24 hours)

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- 2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

DIVISION: ENGINEERED ADHESIVES

TRADE NAME:

3M(TM) Scotch-Grip(TM) Construction Mastic Adhesive 4323

ID NUMBER/U.P.C.:

62-4392-5230-5	00-21200-87987-6	62-4392-5232-1	-	-	-
62-4392-5235-4	-	62-4392-6330-2	00-21200-87988-3		
62-4392-7530-6	00-21200-87989-0	62-4392-7535-5	-	-	-
62-4392-8530-5	00-21200-87990-6	62-4392-8532-1	-	-	-

ISSUED: May 17, 2001

SUPERSEDES: October 17, 2000

DOCUMENT: 06-3130-9

1. INGREDIENT	C.A.S. NO.	PERCENT
KAOLIN.....	1332-58-7	30 - 40
2-METHYLPENTANE.....	107-83-5	10 - 20
3-METHYLPENTANE.....	96-14-0	5 - 10
2,3-DIMETHYLBUTANE.....	79-29-8	5 - 10
GLYCEROL ESTERS OF ROSIN ACIDS.....	8050-31-5	5 - 10
HYDROCARBON RESIN.....	68410-16-2	5 - 10
STYRENE-BUTADIENE POLYMER.....	9003-55-8	5 - 10
BUTADIENE-STYRENE-DIVINYLBENZENE POLYMER.....	26471-45-4	5 - 10
CALCIUM CARBONATE.....	471-34-1	.1 - 5
2,2-DIMETHYLBUTANE.....	75-83-2	1 - 5

IN CASE OF EMERGENCY: THE NUMBERS AT THE TOP OF THIS PAGE PROVIDE 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. The components of this product are in compliance with the chemical notification requirements of TSCA.

2. PHYSICAL DATA

BOILING POINT:..... 122 F
 VAPOR PRESSURE:..... N/D
 VAPOR DENSITY:..... N/D
 EVAPORATION RATE:..... N/D
 SOLUBILITY IN WATER:..... nil

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

2. PHYSICAL DATA (continued)

SPECIFIC GRAVITY:..... 1.077 Water=1
PERCENT VOLATILE:..... ca. 54 % by vol
pH:..... N/A
VISCOSITY:..... Paste
MELTING POINT:..... N/A

APPEARANCE AND ODOR:

Liquid, viscous paste, grey, solvent odor

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... 1 F Setaflash
FLAMMABLE LIMITS - LEL:..... 1.2 % by vol
FLAMMABLE LIMITS - UEL:..... 7.0 % by vol
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:

Water spray, Carbon dioxide, Dry chemical, Dry powder, Foam

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head. Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Vapors may travel long distances along the ground or floor to an ignition source and flash back.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 3 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Class IB Flammable Liquid

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:

Heat, Sparks and/or Flames.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

4. REACTIVITY DATA (continued)

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon Monoxide and Carbon Dioxide, Hydrocarbons, Toxic Vapors, Gases
or Particulates.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Ventilate area. Extinguish all ignition sources. Contain spill. Cover with inorganic absorbent material. Collect spilled material. Collect using non-sparking tools. Clean up residue. Place in an approved metal container.

RECOMMENDED DISPOSAL:

Incinerate in an industrial or commercial facility. Dispose of completely cured (or polymerized) material in a sanitary landfill. Reclaim if feasible.

ENVIRONMENTAL DATA:

No data available.

REGULATORY INFORMATION:

Volatile Organic Compounds: ca. 363 gms/liter Calculated per SCAQMD Rule 443.1.

VOC Less H2O & Exempt Solvents: ca. 363 gms/liter Calculated per SCAQMD Rule 443.1.

Since regulations vary, consult applicable regulations or authorities before disposal. In the event of an uncontrolled release of this material, the user should determine if the release qualifies as a reportable quantity. U.S. EPA Hazardous Waste Number = D001 (Ignitable)

EPCRA HAZARD CLASS:

FIRE HAZARD: Yes PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water. Get immediate medical attention.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

6. SUGGESTED FIRST AID (continued)

SKIN CONTACT:

Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:

Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

IF SWALLOWED:

Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eye contact. Wear unvented goggles during operations in which exposure is likely.

SKIN PROTECTION:

Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, nitrile rubber.

RECOMMENDED VENTILATION:

Use in a well-ventilated area. If exhaust ventilation is not adequate, use appropriate respiratory protection.

RESPIRATORY PROTECTION:

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: half-mask organic vapor respirator.

PREVENTION OF ACCIDENTAL INGESTION:

Do not ingest.

RECOMMENDED STORAGE:

Store in a cool place. Store away from heat. Keep container in well-ventilated area.

FIRE AND EXPLOSION AVOIDANCE:

Keep container tightly closed. Flammable liquid and vapor. Keep away from heat, sparks, open flame, and other sources of ignition. No smoking while handling this material. Vapors may ignite explosively.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
KAOLIN.....	2	MG/M3	TWA	ACGIH	
		RESPIRABLE			
KAOLIN.....	10	MG/M3	TWA	OSHAV	
		AS DUST			
		OSHA VACATED PEL			
KAOLIN.....	15	MG/M3	TWA	OSHA	
		AS TOTAL DUST			
KAOLIN.....	5	MG/M3	TWA	OSHA	
		RESPIRABLE			
2-METHYLPENTANE.....	500	PPM	TWA	ACGIH	
2-METHYLPENTANE.....	1000	PPM	STEL	ACGIH	
3-METHYLPENTANE.....	500	PPM	TWA	ACGIH	
3-METHYLPENTANE.....	1000	PPM	STEL	ACGIH	
2,3-DIMETHYLBUTANE.....	500	PPM	TWA	ACGIH	
2,3-DIMETHYLBUTANE.....	1000	PPM	STEL	ACGIH	
GLYCEROL ESTERS OF ROSIN ACIDS.....	NONE	NONE	NONE	NONE	
HYDROCARBON RESIN.....	NONE	NONE	NONE	NONE	
STYRENE-BUTADIENE POLYMER.....	NONE	NONE	NONE	NONE	
BUTADIENE-STYRENE-DIVINYLBENZENE POLYMER.....	NONE	NONE	NONE	NONE	
CALCIUM CARBONATE.....	10	MG/M3	TWA	ACGIH	
2,2-DIMETHYLBUTANE.....	500	PPM	TWA	ACGIH	
2,2-DIMETHYLBUTANE.....	1000	PPM	STEL	ACGIH	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:

- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- OSHAV: Occupational Safety and Health Administration Vacated PEL.
 Vacated Permissible Exposure Limits (PEL) are enforced as the OSHA PEL in some states. Check with your local regulatory authority.
- NONE: None Established

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

8. HEALTH HAZARD DATA

EYE CONTACT:

Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:

Mild Skin Irritation: signs/symptoms can include redness, swelling, and itching.

INHALATION:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

OTHER HEALTH HAZARD INFORMATION:

Exposure to this material in normal storage and handling has not been reported to cause significant adverse health effects. However, under normal processing conditions, e.g. grinding or heating, this product may release fumes and vapors of variable composition based on specific process conditions. These process releases may produce irritation or any of the health effects listed above when the emissions are present at elevated concentrations. Use with appropriate local exhaust ventilation.

SECTION CHANGE DATES

HEADING SECTION CHANGED SINCE October 17, 2000 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME TILE BRITE CLEANER & DESCALER		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. INVENTORY AMOUNT 10 GALLONS	
6. CONTAINER TYPE(S): N			
7. LOCATION NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Version Number: 1

Preparation date: 2005-09-01

1. PRODUCT AND COMPANY IDENTIFICATION	
Product name:	TILE BRITE Cleaner & Descaler Concentrate
MSDS #:	MS0600078
Product code:	U23009, U23010
Recommended use:	Restroom Care .
Manufacturer, importer, supplier: Unisource Worldwide, Inc. 6600 Governors Lake Parkway Norcross, GA 30071 Phone: 770-447-9000 MSDS Internet Address: www.unisourceink.com	
Emergency telephone number:	1-888-660-6737

2. HAZARDS IDENTIFICATION	
EMERGENCY OVERVIEW	
<ul style="list-style-type: none"> • DANGER • CORROSIVE • CAUSES EYE AND SKIN BURNS • HARMFUL OR FATAL IF SWALLOWED • DO NOT MIX WITH AMMONIA, BLEACH OR OTHER CHLORINATED COMPOUNDS 	
Principle routes of exposure:	<ul style="list-style-type: none"> • Eyes • Skin • Inhalation • Ingestion
Inhalation:	• May cause irritation and corrosive effects to nose, throat and respiratory tract
Ingestion:	<ul style="list-style-type: none"> • Corrosive • Causes burns to mouth, throat and stomach
Skin contact:	<ul style="list-style-type: none"> • Corrosive • May cause permanent damage
Eye contact:	<ul style="list-style-type: none"> • Corrosive • Causes permanent eye damage, including blindness

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS		
Ingredient	CAS #	Weight %
Phosphoric acid	7664-38-2	10 - 30%

HAZARDOUS COMPONENTS			
Ingredient	LD50 Oral	LD50 Dermal	LC50 Inhalation
Phosphoric acid	1.25 g/kg (rat)	2740 mg/kg (rabbit)	25.5 mg/m ³ (rat)

4. FIRST AID MEASURES	
Eye contact:	<ul style="list-style-type: none"> • Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open • Get medical attention immediately
Skin contact:	<ul style="list-style-type: none"> • Flush immediately with plenty of water for at least 15 minutes • Get medical attention immediately
Inhalation:	<ul style="list-style-type: none"> • If breathing is affected, remove to fresh air • Get medical attention immediately

Ingestion:	<ul style="list-style-type: none"> • Do not induce vomiting • Immediately drink one cupful of water or milk • Never give anything by mouth to an unconscious person • Get medical attention immediately
Aggravated Medical Conditions:	<ul style="list-style-type: none"> • Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be more susceptible to irritating effects

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:	<ul style="list-style-type: none"> • The product is not flammable • Extinguish fire using agent suitable for surrounding fire
Specific hazards:	<ul style="list-style-type: none"> • Not applicable
Unusual hazards:	<ul style="list-style-type: none"> • Corrosive material (See sections 8 and 10)
Specific methods:	<ul style="list-style-type: none"> • No special methods required
Special protective equipment for firefighters:	
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear	
Extinguishing media which must not be used for safety reasons:	
No information available	

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	<ul style="list-style-type: none"> • Put on appropriate personal protective equipment (see Section 8.)
Environmental precautions and clean-up methods:	<ul style="list-style-type: none"> • Prevent product from entering drains • Use appropriate containment to avoid environmental contamination • Soak up with inert absorbent material • Shovel into suitable container for disposal

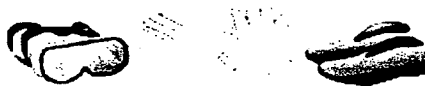
7. HANDLING AND STORAGE

Handling:	<ul style="list-style-type: none"> • Avoid contact with skin, eyes and clothing • Do not taste or swallow • Avoid breathing vapors or mists • Use only with adequate ventilation • Remove and wash contaminated clothing and footwear before re-use • Wash thoroughly after handling • Product residue may remain on/in empty containers • All precautions for handling the product must be used in handling the empty container and residue
FOR COMMERCIAL AND INDUSTRIAL USE ONLY	
Storage:	<ul style="list-style-type: none"> • Keep tightly closed in a dry, cool and well-ventilated place • Protect from freezing • Keep out of the reach of children

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:	
<ul style="list-style-type: none"> • Good general ventilation should be sufficient to control airborne levels • Respiratory protection is not required if good ventilation is maintained 	
Personal Protective Equipment	
Eye protection:	<ul style="list-style-type: none"> • Chemical splash goggles
Hand protection:	<ul style="list-style-type: none"> • Chemical resistant gloves • Includes • neoprene gloves
Skin and body protection:	<ul style="list-style-type: none"> • If major exposure is possible, wear suitable protective clothing and footwear
Respiratory protection:	<ul style="list-style-type: none"> • In case of insufficient ventilation wear suitable respiratory equipment • A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use

Hygiene measures:	<ul style="list-style-type: none"> • Keep away from food, drink and animal feeding stuffs • Handle in accordance with good industrial hygiene and safety practice
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Ingredient	CAS #	ACGIH	OSHA	Mexico
Phosphoric acid	7664-38-2	3 mg/m ³ (STEL) 1 mg/m ³ (TWA)	1 mg/m ³	3 mg/m ³ (STEL) 1 mg/m ³ (TWA)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid	Appearance:	Aqueous solution
Color:	Dark Pink	Odor:	Powder
Specific gravity:	1.08	pH:	0.77
Dilution pH:	No information available	Density:	8.98
Bulk density:	No information available	Vapor density:	No information available
Evaporation rate:	No information available	Solubility:	Soluble
VOC:	0	Viscosity:	No information available
Solubility in other solvents:	No information available		
Partition coefficient (n-octanol/water):	No information available		
Boiling point/range:	Not determined		
Melting point/range:	Not determined		
Flash point:	>200 (°F)>99.3 (°C)		
Decomposition temperature:	Not determined		
Autoignition temperature:	No information available		

10. STABILITY AND REACTIVITY

Stability:	<ul style="list-style-type: none"> • The product is stable
Polymerization:	<ul style="list-style-type: none"> • Hazardous polymerisation does not occur
Hazardous decomposition products:	<ul style="list-style-type: none"> • None reasonably foreseeable
Materials to avoid:	<ul style="list-style-type: none"> • Strong oxidising agents • Strong exothermic reaction with acids

11. TOXICOLOGICAL INFORMATION

Acute toxicity	<ul style="list-style-type: none"> • Corrosive
Component Information:	<ul style="list-style-type: none"> • See Section 3
Chronic toxicity:	<ul style="list-style-type: none"> • None known
Specific effects	
Carcinogenic effects:	<ul style="list-style-type: none"> • None known
Mutagenic effects:	<ul style="list-style-type: none"> • None known
Reproductive toxicity:	<ul style="list-style-type: none"> • None known
Target organ effects:	<ul style="list-style-type: none"> • None known

12. ECOLOGICAL INFORMATION

Environmental Information:	<ul style="list-style-type: none"> • no data available
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13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:	<ul style="list-style-type: none"> • Undiluted product is regulated under environmental and transportation laws as a corrosive waste • Dispose of according to all federal, state and local applicable regulations
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14. TRANSPORT INFORMATION

DOT/TDG:	• Please refer to the Bill of Lading/receiving documents for up to date shipping information
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15. REGULATORY INFORMATION**International Inventories**

All components of this product are listed on the following inventories: U.S.A. (TSCA).

U.S. Regulations

California Proposition 65: This product is not subject to the reporting requirements under California's Proposition 65

Canada

WHMIS hazard class:	Not for sale in Canada .
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STATE RIGHT TO KNOW

Ingredient	CAS #	NJRTK:	MARTK:	PARTK:	RIRTK:	ILRTK:	CTRTK:
Water	7732-18-5	-	-	-	-	-	-
Phosphoric acid	7664-38-2	Listed	Listed	Listed	Listed	Listed	Listed
Alcohol ethoxylates	68439-46-3	-	-	-	-	-	-

CERCLA / SARA

Ingredient	CAS #	Weight %	CERCLA/SARA RQ (lbs)	Section 302 TPQ (lbs)	Section 313
Phosphoric acid	7664-38-2	10 - 30%	5000		

CAA HAP/CAA ODS/CWA Priority Pollutants: None

16. OTHER INFORMATION

HMIS	Health	3	Fire Hazard	0	Reactivity	0
NFPA	Health:	3	Flammability:	0	Instability:	0

Reason for revision:	Not applicable
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Prepared by:	NAPRAC
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Additional advice:	None
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Notice to Reader: This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

NON-CAS CHEMICALS

The form is for reporting only the following materials:

1. Waste antifreeze (ethylene glycol based).
2. Miscellaneous flammable liquids (that have no other hazards besides flammability and are under the thresholds for SARA Title 3 List of Lists).
3. Miscellaneous combustible liquids (that have no other hazards besides combustibility and are under the thresholds for SARA Title 3 Lists of Lists).
4. Corrosive liquids.

1. COMMON CHEMICAL NAME ALLSTAR CHEMTRON LINCH NRS		2. PHYSICAL STATE (Check one) <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
3. HEALTH HAZARD (Check one or both) <input checked="" type="checkbox"/> Acute <input checked="" type="checkbox"/> Chronic	4. FIRE HAZARD (Check one) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. INVENTORY AMOUNT 10 GALLONS	
6. CONTAINER TYPE(S): N			
7. LOCATION NORTH PORTAL PAD WAREHOUSE (CONFIDENTIAL)			

Container Type Codes:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Above ground tank B. Below ground tank C. Tank inside building D. Steel drum E. Plastic or non-metal drum F. Can G. Carboy | <ul style="list-style-type: none"> M. Glass bottles or jugs N. Plastic bottles or jugs O. Tote bin R. Plastic bucket S. Metal bucket Z. Other (ie. Aerosol cans, etc.) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

02-117

MATERIAL SAFETY DATA SHEET

This MSDS complies with OSHA's Hazard Communication Standard 29 CFR 1910.1200 and OSHA Form 174

IDENTITY AND DISTRIBUTOR'S INFORMATION

NFPA Rating: Health-2; Flammability-0; Reactivity-0; Special: COR Manufactured For: UNISOURCE WORLDWIDE, INC. Address: 133 Peachtree St. NE. Address: Atlanta, GA 30303		HMIS Rating: Health-2; Flammability-0; Reactivity-0; Personal Protection U DOT Hazard Classification: CORROSIVE LIQUID, ORGANIC, BASIC, N.O.S. 8 (When inner container is 1 gallon or smaller: Consumer Commodity, ORM-D) Identity (trade name as used on label): ALLSTAR CHEMTROL/CINCH NRS (U14960, U14961, U17174)	
Phone: 800-UNISOURCE Emergency Response Number: 1-888-860-8737 NOTICE: JUDGEMENT BASED ON INDIRECT TEST DATA		MSDS Number: BCT812 Revision - 1 Date Prepared: 04/02 Prepared By: JB Information Calls: (770)422-2071	

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

COMPONENTS-CHEMICAL NAMES AND COMMON NAMES (Hazardous Components 1% or greater; Carcinogens 0.1% or greater)	CAS Number	SAFHA II UST	OSHA PEL (ppm)	ACGIH TLV (ppm)	Carcinogen Ref. Source **
2-BUTOXYETHANOL	111-76-2	Yes	25(skin)	25(skin)	d
MONOETHANOLAMINE	141-43-5	No	3(TWA)	3(TWA)	d
				8(STEL)	

SECTION 2 - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: approximately 212°F	Specific Gravity (H ₂ O=1): 0.97
Vapor Pressure: PSIG @ 70°F (Aerosols): N/A	Vapor Pressure (Non-Aerosols)(mm Hg and Temperature): N/D
Vapor Density (A _r = 1): N/D	Evaporation Rate (water = 1): 1.0
Solubility in Water: Soluble	Water Reactive: No
Appearance and Odor: Colorless liquid with a floral-rose scent with butylamine undertones	

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY as per USA FLAME PROJECTION TEST (Aerosols) N/A	Auto Ignition Temperature N/A	Flammability Limits in Air by % in Volume: % LEL: N/A % UEL: N/A
FLASH POINT AND METHOD USED (non-aerosols): None to boiling.	SPECIAL FIRE FIGHTING PROCEDURES: Cool fire exposed containers with water spray to prevent pressure build up and container rupture.	
EXTINGUISHER MEDIA: Any media appropriate for surrounding fire.	Unusual Fire & Explosion Hazards: Residue remaining after water has evaporated is combustible and can be ignited.	

SECTION 4 - REACTIVITY HAZARD DATA

STABILITY X STABLE UNSTABLE	HAZARDOUS POLYMERIZATION WRL X WILL NOT OCCUR
Incompatibility (Mat. to avoid): Any material not compatible with water.	Conditions to Avoid: None
Hazardous Decomposition Products: Oxides of carbon and nitrogen, unidentified organic compounds.	

SECTION 5 - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: INHALATION INGESTION X SKIN ABSORPTION X EYE NOT HAZARDOUS	
ACUTE EFFECTS: Symptoms of Systemic Overexposure: Headache, nausea, vomiting, drowsiness, unconsciousness.	
Inhalation: Vapors may be irritating in high concentrations. Prolonged breathing of non-irritating concentrations may damage liver and/or kidneys	
Eye Contact: Irritant. Prolonged contact may cause chemical burns.	Skin Contact: Mildly irritating. Prolonged or widespread skin contact may result in absorption of potentially harmful amounts of material
Ingestion: May cause chemical burns of the mouth, throat, esophagus and stomach.	
CHRONIC EFFECTS: May possibly result in damage to the liver, kidneys, lungs and red blood cells.	
Medical Conditions Generally Aggravated by Exposure: Asthma, inflammatory or fibrotic pulmonary disease, existing dermatitis.	

EMERGENCY FIRST AID PROCEDURES

Eye Contact: Immediately flush with water for 15 minutes. If irritation persists, get medical attention.
Skin Contact: Immediately remove contaminated clothing and flush skin with water.
Inhalation: Remove to fresh air.
Ingestion: DO NOT INDUCE VOMITING. Drink 3 to 4 glasses of water. Get immediate medical attention.

SECTION 6 - CONTROL AND PROTECTIVE MEASURES

Respiratory Protection (specify type): None needed under normal conditions.	Eye Protection: Chemical goggles.
Protective Gloves: Rubber or other impervious material.	
Ventilation Requirements: Normal room ventilation is usually adequate.	
Other Protective Clothing & Equipment: Impervious clothing as needed to prevent skin contact. Eyewash station and safety shower	
Hygienic Work Practices: Do not eat, drink or smoke in work area. Wash hands after handling.	

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps To Be Taken if Material is Spilled Or Released: Neutralize spilled material with acetic acid & soak up in an inert absorbent. Dispose of in a legal manner.
Waste Disposal Methods: Dispose of in accordance with all local, state and federal regulations.
Precautions To Be Taken In Handling & Storage: Store in original shipping containers. Keep closed when not in use. Protect from extreme heat and cold
Other Precautions for Special Hazards: KEEP OUT OF REACH OF CHILDREN. Read & follow label directions.

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind.
 ** Chemical Listed as Carcinogen or Potential Carcinogen [a] NTP [b] IARC Monograph [c] OSHA [d] Not Listed [e] Animal Data Only

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT YMP-ARVILLE

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:
9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 4460 SOUTH ARVILLE #6

CITY: LAS VEGAS STATE: NV ZIP: 89103

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOCDUTY OFFICER TITLE: _____

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

2 - NAME: SCOTT WADE TITLE: -FAC OPS DIR-

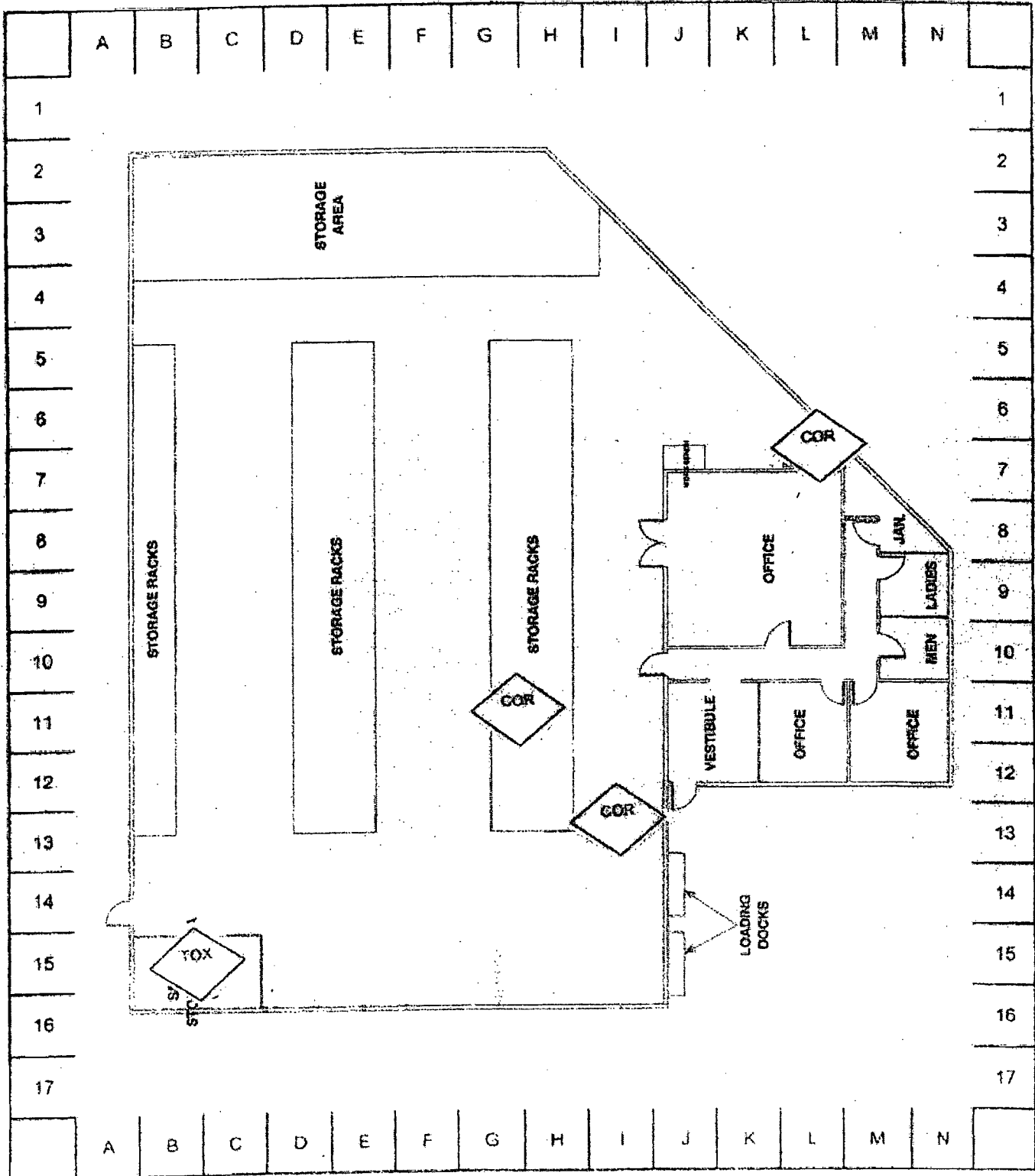
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

*Phone Types: Work, Mobile, Cell, Pager, Home

HAZARDOUS MATERIALS SITE MAP
1403/54188



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project

DATE February 14, 2007

ADDRESS 4460 S. Arville, #6

CITY Las Vegas

PAGE 1 OF 1

COMPANY # / FACILITY #: 1403 / 54189

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT YMP-B1450

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY LAS VEGAS FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:
9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 1450 CENTER CROSSING ROAD

CITY: LAS VEGAS STATE: NV ZIP: 89144

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOCDUTY OFFICER TITLE: _____

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

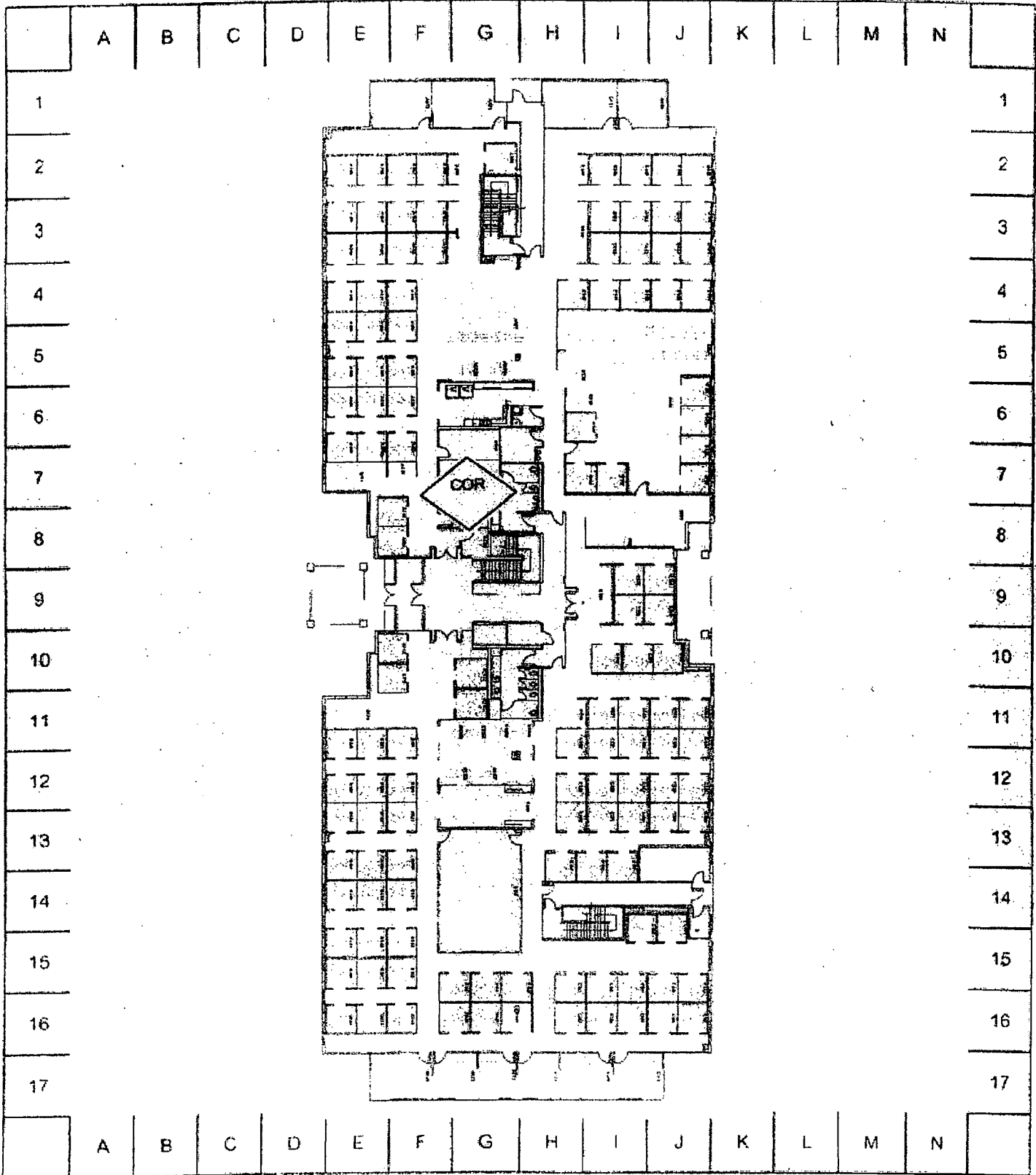
2 - NAME: SCOTT WADE TITLE: ~~FAC OPS DIR~~
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

*Phone Types: Work, Mobile, Cell, Pager, Home

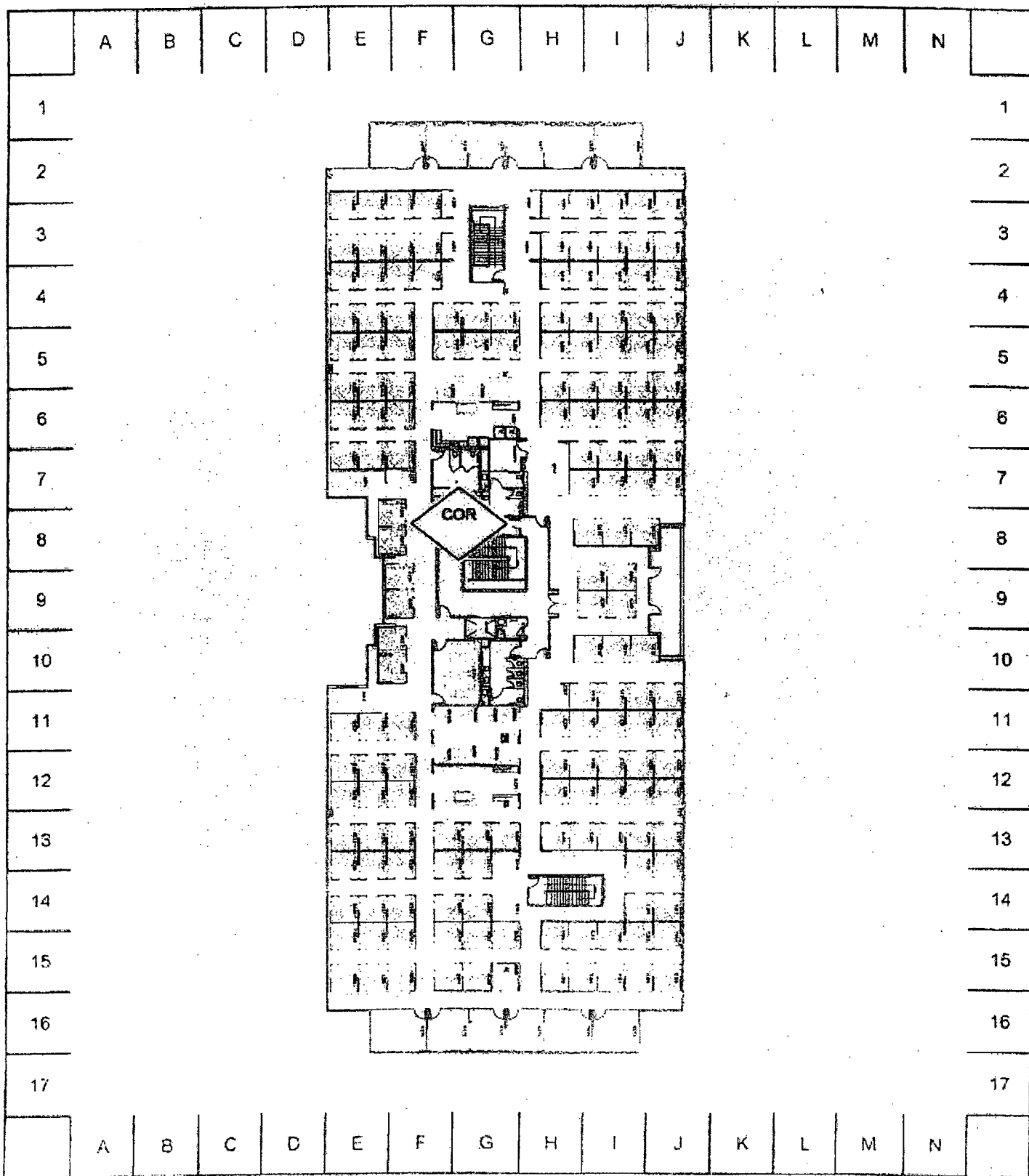
HAZARDOUS MATERIALS SITE MAP
1403/54189



BUSINESS NAME U.S. Department of Energy, Yucca Mountain Project
 ADDRESS 1450 Center Crossing Road

DATE February 14, 2007
 PAGE 1 OF 2

HAZARDOUS MATERIALS SITE MAP
1403/54189



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project
ADDRESS 1450 Center Crossing Road

DATE February 14, 2007
PAGE 2 OF 2

COMPANY # / FACILITY #: 1403 / 54659

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT BEATTY DISTRIBUTION CENTER

COUNTY: NYE LOCAL FIRE DEPT: NYE COUNTY BEATTY VFD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:

9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 100 NORTH E AVENUE

CITY: BEATTY STATE: NV ZIP: 89003

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOC DUTYOFFICER TITLE: 24-HOURS

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

2 - NAME: SCOTT WADE

TITLE: -FAC OPS DIR-

Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

*Phone Types: **W**ork, **M**obile, **C**ell, **P**ager, **H**ome

MATERIAL SAFETY DATA SHEET

FOR ODORIZED PROPANE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Odorized Commercial Propane

Chemical Name: Propane

Chemical Family: Paraffinic Hydrocarbon

Formula: C₃H₈

Synonyms: Dimethylmethane, LP-Gas, Liquefied Petroleum Gas (LPG), Propane, Propyl Hydride

Name & Address:	Transportation Emergency Number:	Emergency Number:
		For Routine Info, Call:

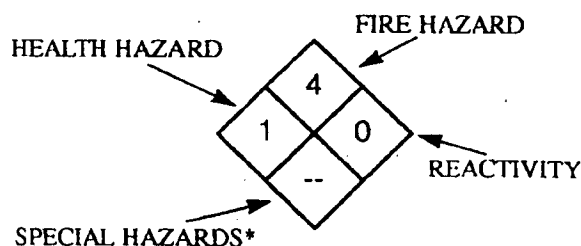
2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME /CAS NUMBER	PERCENTAGE	OSHA PEL	ACGIH TLV
Propane/74-98-6	87.5-100	<div style="border: 1px solid black; width: 80px; height: 40px; display: inline-block;"></div> 1,000 ppm	Simple asphyxiant
Ethane/74-84-0	0-5.0		Simple asphyxiant
Propylene/115-07-1	0-10.0		Simple asphyxiant
Butanes/various	0-2.5		Simple asphyxiant
Ethyl Mercaptan/75-08-1	16-25 ppm	0.5 ppm	0.5 ppm

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! Flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor replaces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing of vapor. Keep container valve closed when not in use.



- | | |
|------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Severe 4 | Slight 1 |
| Serious 3 | Minimal 0 |
| Moderate 2 | * (Ref. NFPA 704) |

POTENTIAL HEALTH EFFECTS INFORMATION

ROUTES OF EXPOSURE:

Inhalation: Asphyxiant. It should be noted that before suffocation could occur, the lower flammability limit of propane in air would be exceeded, possibly causing both an oxygen-deficient and explosive atmosphere. Exposure to concentrations >10% may cause dizziness. Exposure to atmospheres containing 8%-10% or less oxygen will bring about unconsciousness without warning, and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.

Eye Contact: Contact with liquid can cause freezing of tissue.

Skin Contact: Contact with liquid can cause frostbite.

[Skin Absorption]: None.

[Ingestion]: Liquid can cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

CHRONIC EFFECTS: None.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None.

OTHER EFFECTS OF OVEREXPOSURE: None.

CARCINOGENICITY: Propane is not listed by NTP, OSHA or IARC.

4. FIRST AID MEASURES

INHALATION: Persons suffering from lack of oxygen should be removed to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

EYE CONTACT: Contact with liquid can cause freezing of tissue. Gently flush eyes with lukewarm water. Obtain medical attention immediately.

SKIN CONTACT: Contact with liquid can cause frostbite. Remove saturated clothes, shoes and jewelry. Immerse affected area in lukewarm water not exceeding 105° F. Keep immersed. Get prompt medical attention.

INGESTION: If swallowed, get immediate medical attention.

NOTES TO PHYSICIAN: None.

5. FIRE-FIGHTING MEASURES

FLASH POINT: -156° F (-104° C)

AUTOIGNITION: 842° F (432° C)

IGNITION TEMPERATURE IN AIR: 920-1120° F

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 2.15% Upper: 9.6%

EXTINGUISHING MEDIA: Dry chemical, CO², water spray or fog for surrounding area. Do not extinguish fire until propane source is shut off.

SPECIAL FIRE-FIGHTING INSTRUCTIONS: Evacuate personnel from danger area. Immediately cool container with water spray from maximum distance, taking care not to extinguish flames. If flames are accidentally extinguished, explosive re-ignition may occur. Where water is abundant and immediate, the fire should be allowed to burn while the container and area are cooled and the flow of propane is shut off. Where water is scarce, compare the risk of allowing the area to continue to heat from the fire and the alternative of extinguishing the fire without shutting off the propane flow, which may allow for the propane to accumulate and re-ignite explosively.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Propane is easily ignited. It is heavier than air; therefore, it can collect in low areas where an ignition source can be present. Pressure in a container can build up due to heat and container may rupture if pressure relief devices should fail to function. Propane released from a properly functioning relief valve on an overheated container can also become ignited.

HAZARDOUS COMBUSTION PRODUCTS: None.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Evacuate the immediate area. Eliminate any possible sources of ignition and provide maximum ventilation. Shut off source of propane, if possible. If leaking from container, or valve, contact your supplier.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS: Propane vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Leak-check system with a leak detector or solution, never with flame. Make certain the container service valve is shut off prior to connecting or disconnecting. If container valve does not operate properly, discontinue use and contact supplier. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into pressure relief valve or cylinder valve cap openings. Do not drop or abuse cylinders. Never strike an arc on a gas container or make a container part of an electrical circuit. See "16. OTHER INFORMATION" for additional precautions.

STORAGE PRECAUTIONS: Store in a safe, authorized location (outside, detached storage is preferred) with adequate ventilation. Specific requirements are listed in NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*. Isolate from heat and ignition sources. Containers should never be allowed to reach temperature exceeding 125° F (52° C). Isolate from combustible materials. Provide separate storage locations for other compressed and flammable gases. Propane containers should be separated from oxygen cylinders, or other oxidizers, by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high having a fire rating of at least 1/2 hour. Full and empty cylinders should be segregated. Store cylinders in upright position, or with pressure relief valve in vapor space. Do not drop or abuse cylinders. Keep container valve closed and plugged or capped when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue and should be treated as if they were full.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Ventilation: Provide ventilation adequate to ensure propane does not reach a flammable mixture.

RESPIRATORY PROTECTION (SPECIFY TYPE)

General Use: None.

Emergency Use: If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, then the atmosphere may be flammable (See Section 5). Appropriate precautions must be taken regarding flammability.

PROTECTIVE CLOTHING: Avoid skin contact with liquid propane because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION: Safety glasses are recommended when handling cylinders.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: @ 14.7 psia = -44° F

SPECIFIC GRAVITY OF VAPOR (Air = 1) at 60° F: 1.50

SPECIFIC GRAVITY OF LIQUID (Water = 1) at 60° F: 0.504

VAPOR PRESSURE: @ 70° F = 127 psig

@ 105° F = 210 psig

EXPANSION RATIO (From liquid to gas @ 14.7 psia): 1 to 270

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%

APPEARANCE AND ODOR: A colorless and tasteless gas at normal temperature and pressure.

An odorant (ethyl mercaptan) has been added to provide a strong unpleasant odor. Should a propane-air mixture reach the lower limits of flammability, the ethyl mercaptan concentration will be approximately 0.5 ppm in air.

ODORANT WARNING: Odorant is added to aid in the detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-01. Odorant has a foul smell. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system, or fugitive propane gas from underground leaks passing through certain soils, can reduce the odor level. No odorant will be 100% effective in all circumstances. If odorant appears to be weak, notify propane supplier immediately.

10. STABILITY AND REACTIVITY

STABILITY: Stable.

Conditions to Avoid: Keep away from high heat, strong oxidizing agents and sources of ignition.

REACTIVITY:

Hazardous Decomposition Products: Under fire conditions, fumes, smoke, carbon monoxide, aldehydes and other decomposition products. When used as an engine fuel, incomplete combustion can cause carbon monoxide, a toxic gas.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Propane is non-toxic and is a simple asphyxiant, however, it does have slight anesthetic properties and higher concentrations may cause dizziness.

[IRRITANCY OF MATERIAL]: None.

[SENSITIZATION TO MATERIAL]: None

[REPRODUCTIVE EFFECTS]: None

[TERATOGENICITY]: None

[MUTAGENICITY]: None

[SYNERGISTIC MATERIALS]: None

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected. Propane does not contain any Class I or Class II ozone-depleting chemicals (40 CFR Part 82). Propane is not listed as a marine pollutant by DOT (49 CFR Part 171).

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused product in the container. Return to supplier for safe disposal.

Residual product within process system may be burned at a controlled rate, if a suitable burning unit (flare stack) is available on site. This shall be done in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT SHIPPING NAME: Liquefied Petroleum Gas

HAZARD CLASS: 2.1 (Flammable Gas)

IDENTIFICATION NUMBER: UN 1075

PRODUCT RQ: None **SHIPPING LABEL(S):** Flammable gas

IMO SHIPPING NAME: Propane

PLACARD (WHEN REQUIRED): Flammable gas

IMO IDENTIFICATION NUMBER: UN 1978

SPECIAL SHIPPING INFORMATION: Container should be transported in a secure, upright position in a well-ventilated vehicle.

15. REGULATORY INFORMATION

The following information concerns selected regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state [provincial] and local level.

U.S. FEDERAL REGULATIONS

EPA Environmental Protection Agency

CERCLA Comprehensive Environmental Response, Compensation and Liability Act of 1980
(40 CFR Parts 117 and 302)

Reportable Quantity (RQ): None

SARA Superfund Amendment and Reauthorization Act

- SECTION 302/304: Requires emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).

Extremely Hazardous Substances: None

Threshold Planning Quantity (TPQ): None

- SECTIONS 311/312: Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA-defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE: No

PRESSURE: Yes

DELAYED: No

REACTIVITY: No

FLAMMABLE: Yes

- SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Propane does not require reporting under Section 313.

40 CFR PART 68 Risk Management for Chemical Accidental Release

TSCA Toxic Substance Control Act

Propane is listed on the TSCA inventory.

OSHA Occupational Safety and Health Administration

29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals.

FDA Food and Drug Administration

21 CFR 184.1655: Generally recognized as safe (GRAS) as a direct human food ingredient when used as a propellant, aerating agent and gas.

16. OTHER INFORMATION

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressure to be encountered.

NFPA 58 *Standard for the Storage and Handling of Liquefied Petroleum Gases* and OSHA 29 CFR 1910.10 require that all persons employed in handling LP-gases be trained in proper handling and operating procedures, which the employer shall document. Contact your propane supplier to arrange for the required training. Allow only trained and qualified persons to install and service propane containers and systems.

WARNING: Be aware that with odorized propane the intensity of ethyl mercaptan stench (its odor) may fade due to chemical oxidation (in the presence of rust, air or moisture), adsorption or absorption. Some people have nasal perception problems and may not be able to smell the ethyl mercaptan stench. Leaking propane from underground gas lines may lose its odor as it passes through certain soils. While ethyl mercaptan may not impart the warning of the presence of propane in every instance, it is generally effective in a majority of situations. Familiarize yourself, your employees and customers with this warning, and other facts associated with the so-called "odor-fade" phenomenon. If you do not already know all the facts, contact your propane supplier for more information about odor, electronic gas alarms and other safety considerations associated with the handling, storage and use of propane.

ISSUE INFORMATION

Issue Date: _____

This material safety data sheet and the information it contains is offered to you in good faith as accurate. This Supplier does not manufacture this product but is a supplier of the product independently manufactured by others. Much of the information contained in this data sheet was received from sources outside our Company. To the best of our knowledge this information is accurate, but this Supplier does not guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely, comply with all applicable laws and regulations and to assume the risks involved in the use of this product.

NO WARRANTY OR MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSES, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OF COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

Prepared by

NATIONAL PROPANE GAS ASSOCIATION

1600 Eisenhower Lane, Suite 100, Lisle, Illinois 60532

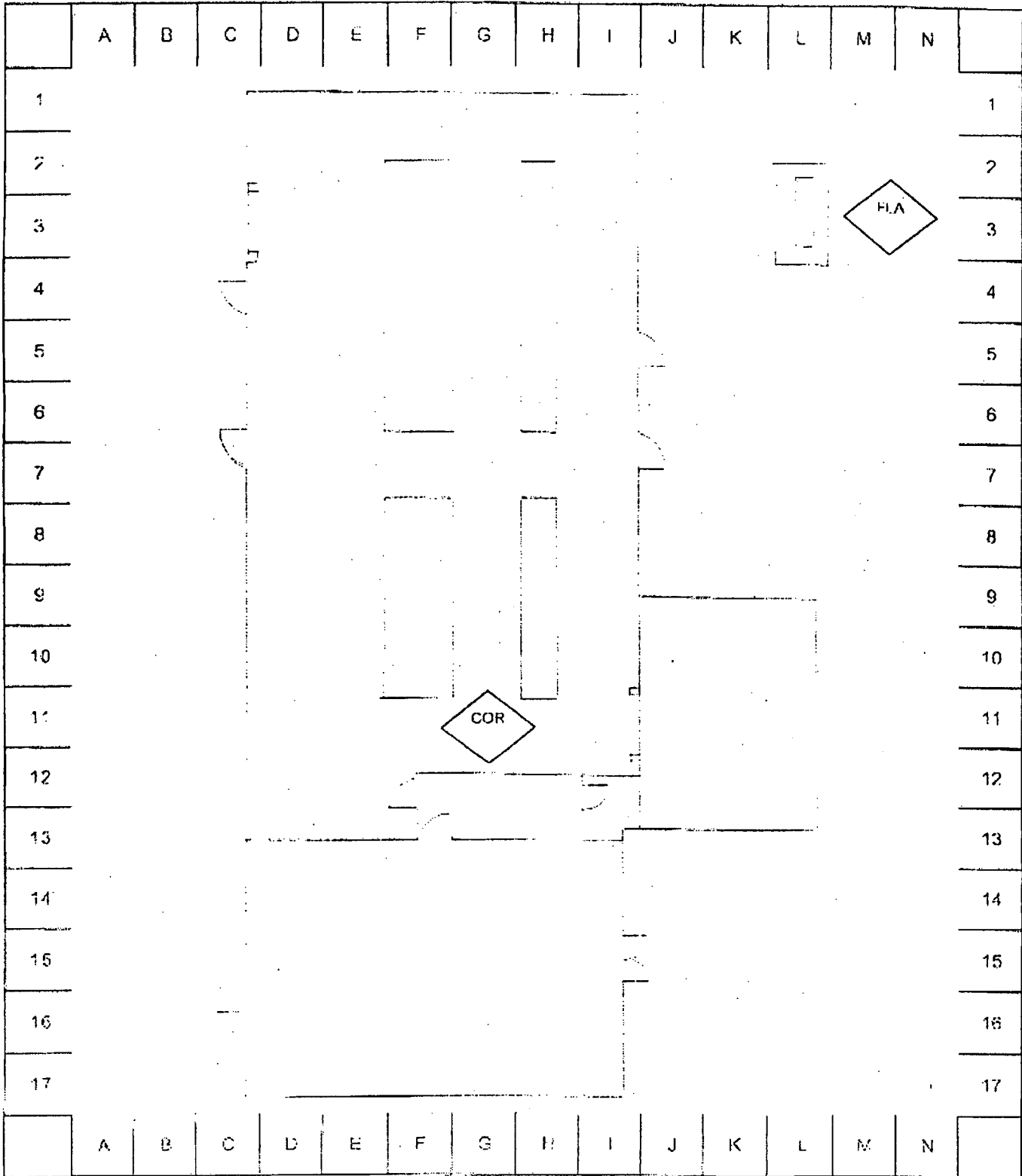
Phone 630/515-0600

Printed in U.S.A.

The purpose of this bulletin is to set forth general safety practices for the installation, operation, and maintenance of LP-gas equipment. It is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures which would enhance safe LP-gas operations. Issuance of this bulletin is not intended to nor should it be construed as an undertaking to perform services on behalf of any party either for their protection or for the protection of third parties. The National Propane Gas Association assumes no liability for reliance on the contents of this bulletin.

Issued 12/96

HAZARDOUS MATERIALS SITE MAP



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project

DATE February 21, 2007

ADDRESS 100 North E Avenue

CITY Beatty

PAGE 1 OF 1

COMPANY # / FACILITY #: 1403 / 55555

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT HILLSHIRE

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY LAS VEGAS FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:
9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 1551 HILLSHIRE DRIVE

CITY: LAS VEGAS STATE: NV ZIP: 89134-6321

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOCDUTY OFFICER TITLE: _____

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

2 - NAME: SCOTT WADE TITLE: —FAC OPS DIR—
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 327-0173 PHONE TYPE *: C

PHONE #: (702) 794-5459 PHONE TYPE *: W

*Phone Types: Work, Mobile, Cell, Pager, Home

FACILITY NAME: YUCCA MOUNTAIN PROJECT

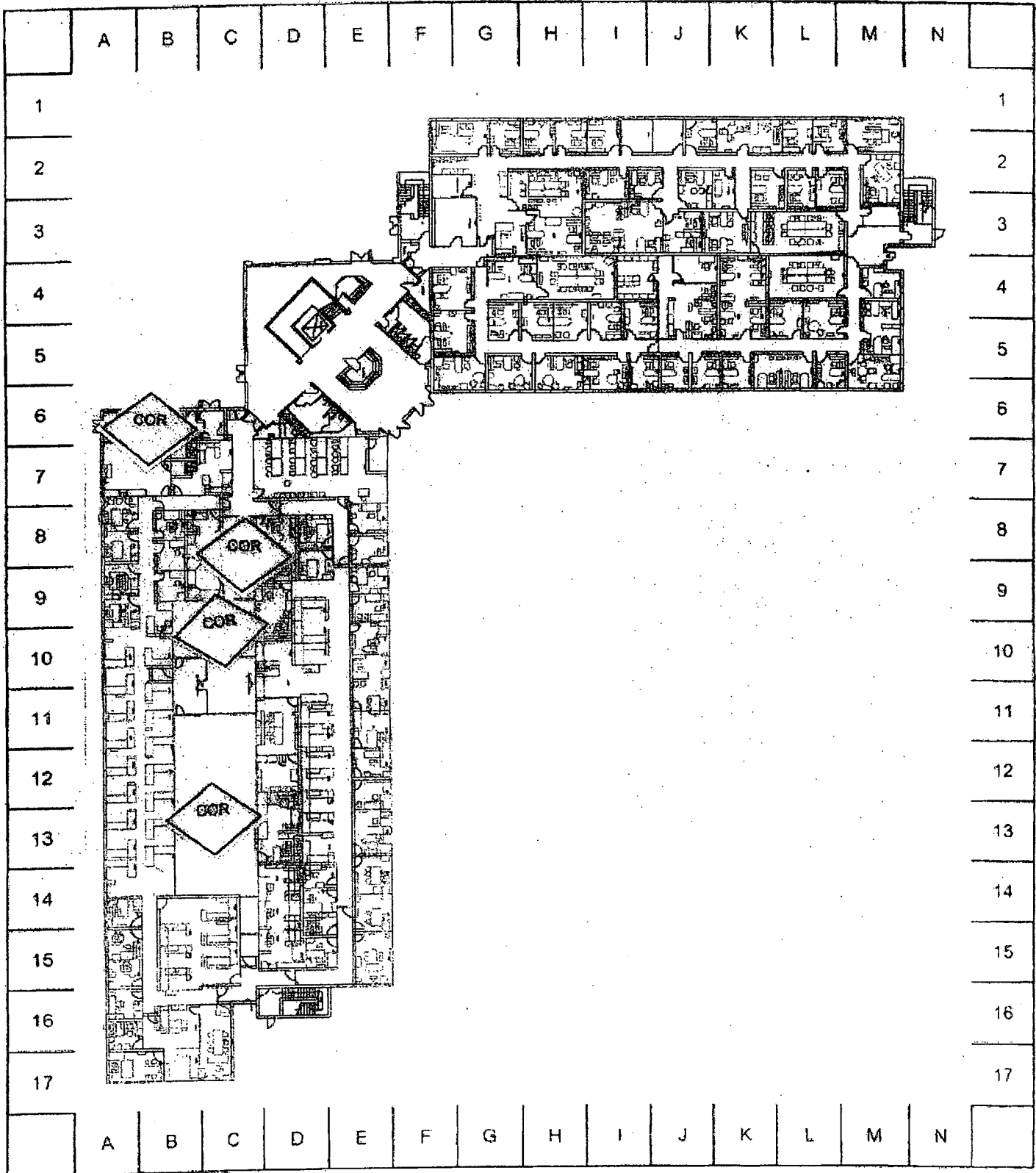
COMPANY # / FACILITY #: 1403/55555

CHEMICAL LIST AS PROVIDED FROM LAST YEAR'S REPORT

Please pay close attention to the CAS Numbers listed below. The CAS numbers are found on the Material Safety Data Sheets (MSDS) provided by the chemical supplier. If no CAS number exists for the Substance in question, please move it to the Non Cas Chem page (7). **VERIFY** the CAS numbers listed in the first column. **FILL** in the blanks if the CAS# is missing. To **CHANGE** the quantity stored for a chemical, write the current amount under the "MAX QTY THIS YEAR" column. To **DELETE** a chemical place an "X" under the "REMOVE CHEM" column. To **ADD** a new chemical, complete page 6. (Nevada Chemical Information Sheet)

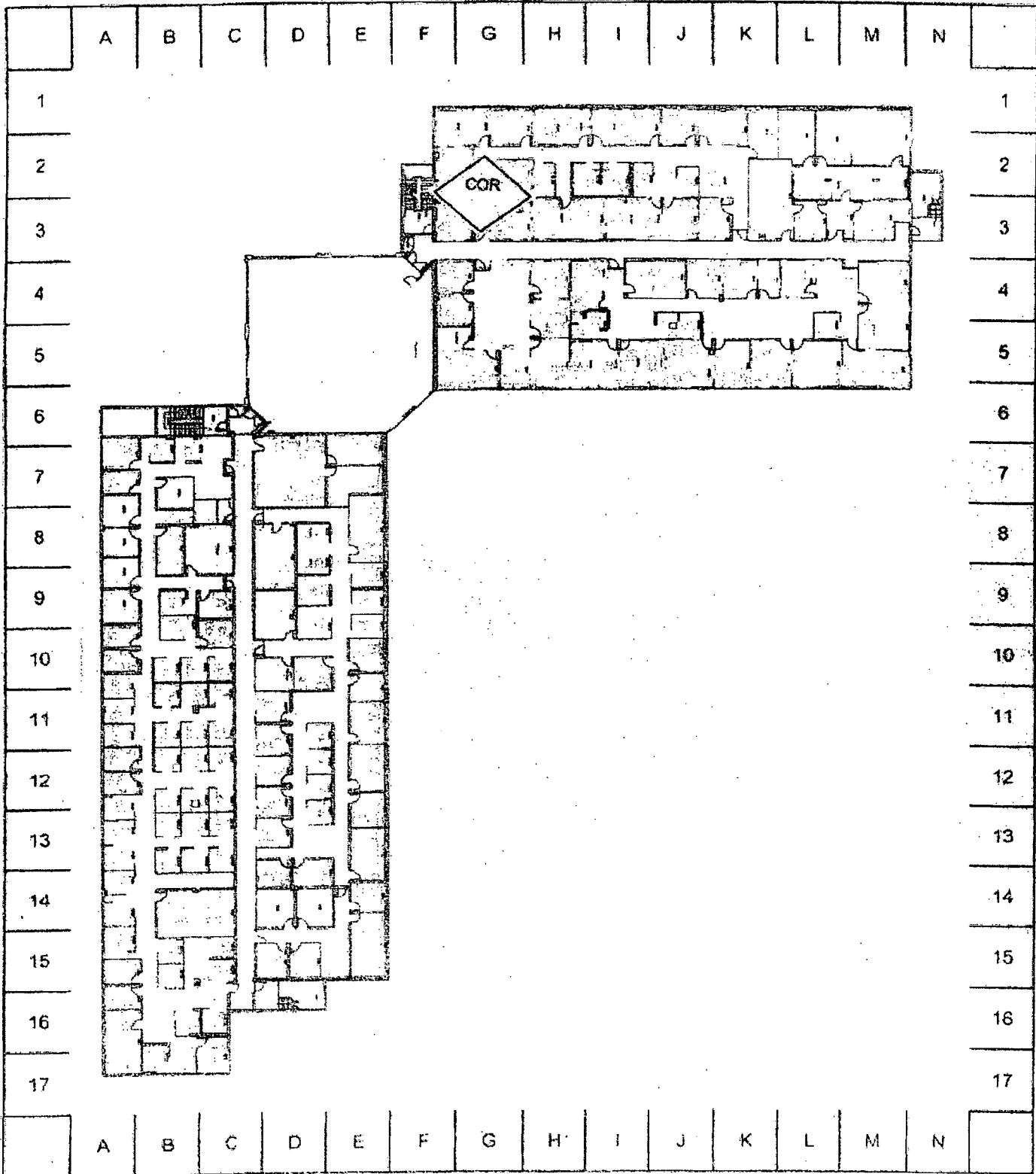
<u>CAS #</u>	<u>CHEMICAL NAME</u>	<u>COMMON NAME</u>	<u>MAX QTY LAST YR</u>	<u>MAX QTY THIS YEAR</u>	<u>EHS/OSHA CHEM</u>	<u>REMOVE CHEM</u>
7664-93-9	SULFURIC ACID	BATTERY ELECTROLYTE	7164 LBS	3375	E	
7439-92-1	LEAD	LEAD	14623 LBS	12065	O	

HAZARDOUS MATERIALS SITE MAP
1403/55555



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project DATE February 14, 2007
 ADDRESS 1551 Hillshire Drive CITY Las Vegas PAGE 1 OF 2

HAZARDOUS MATERIALS SITE MAP
1403/5555



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project DATE February 14, 2007
 ADDRESS 1551 Hillshire Drive CITY Las Vegas PAGE 2 OF 2

COMPANY # / FACILITY #: 1403 / 55683

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT YMP-B3

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY LAS VEGAS FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:

9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #:

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 1251 N TOWN CENTER DRIVE

CITY: LAS VEGAS STATE: NV ZIP: 89144

E-MAIL:

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOC DUTY OFFICER TITLE: 24-HOURS

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

2 - NAME: SCOTT WADE

TITLE: ~~FAC OPS DIR~~

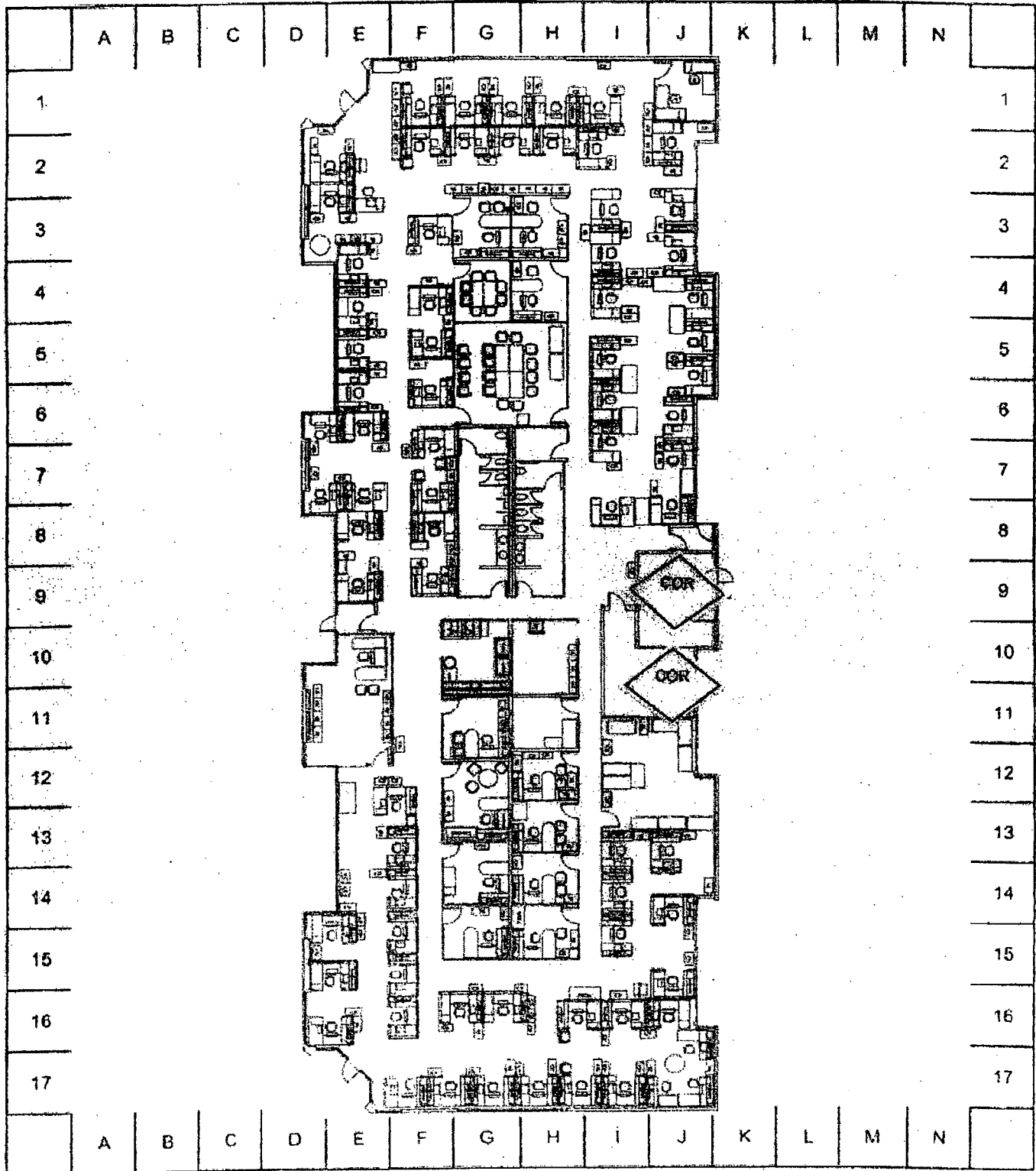
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

*Phone Types: Work, Mobile, Cell, Pager, Home

HAZARDOUS MATERIALS SITE MAP
1403/55683



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project

DATE February 14, 2007

ADDRESS 1251 N. Town Center Drive

CITY Las Vegas

PAGE 1 OF 1

COMPANY # / FACILITY #: 1403 / 55927

FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT SAHARA DATA CENTER

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:
9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 794-5459 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 4489 EAST SAHARA AVENUE

CITY: LAS VEGAS STATE: NV ZIP: 89104

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: SCOTT WADE TITLE: DIRECTOR FAC OPS
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

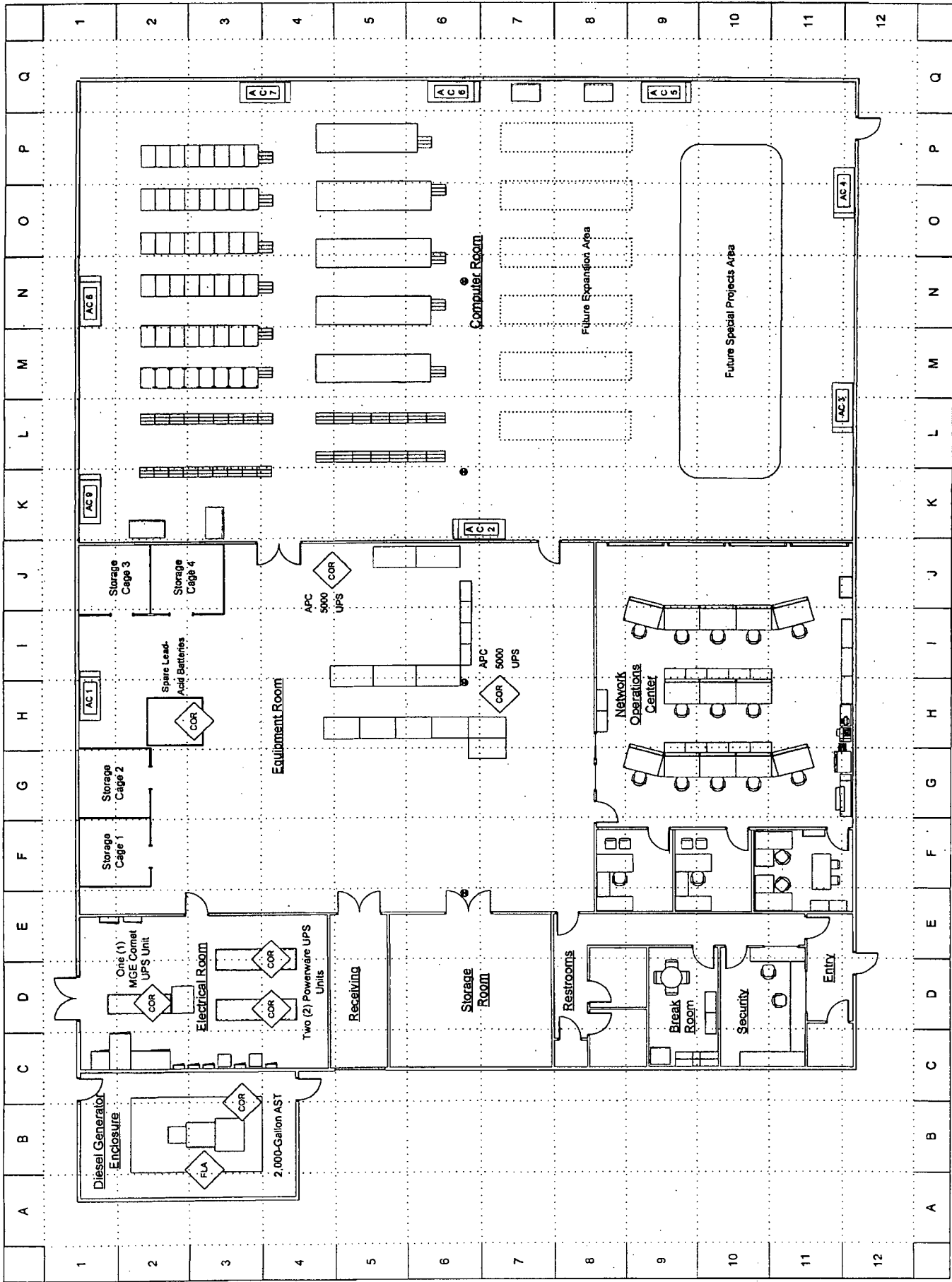
2 - NAME: FOCDUTY OFFICER TITLE: 24-HOURS

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: _____ PHONE TYPE *: _____

*Phone Types: Work, Mobile, Cell, Pager, Home

HAZARDOUS MATERIALS SITE MAP 1403/55927



FACILITY

FACILITY NAME: YUCCA MOUNTAIN PROJECT B1180 NORTH TOWN CENTER

COUNTY: CLARK LOCAL FIRE DEPT: CLARK COUNTY LAS VEGAS FD

STANDARD INDUSTRIAL CLASSIFICATION CODE OR PRINCIPAL BUSINESS ACTIVITY:
9199

BUSINESS PHONE #: (702) 794-5459 TYPE *: W

BUSINESS EMERGENCY PHONE #: (702) 295-5915 TYPE *: W

FAX #: _____

PHYSICAL ADDRESS: (Complete only if different from Billing address)

STREET: 1180 N TOWN CENTER DRIVE

CITY: LAS VEGAS STATE: NV ZIP: 89144

E-MAIL: _____

CONTACT INFORMATION:

LOCAL OWNER/MANAGER: SCOTT WADE PHONE #: (702) 794-5459 TYPE *: W

LOCAL 24 HOUR EMERGENCY CONTACTS:

1 - NAME: FOC DUTYOFFICER TITLE: 24-HOURS

PHONE #: (702) 295-5915 PHONE TYPE *: W

PHONE #: (702) 295-5915 PHONE TYPE *: H

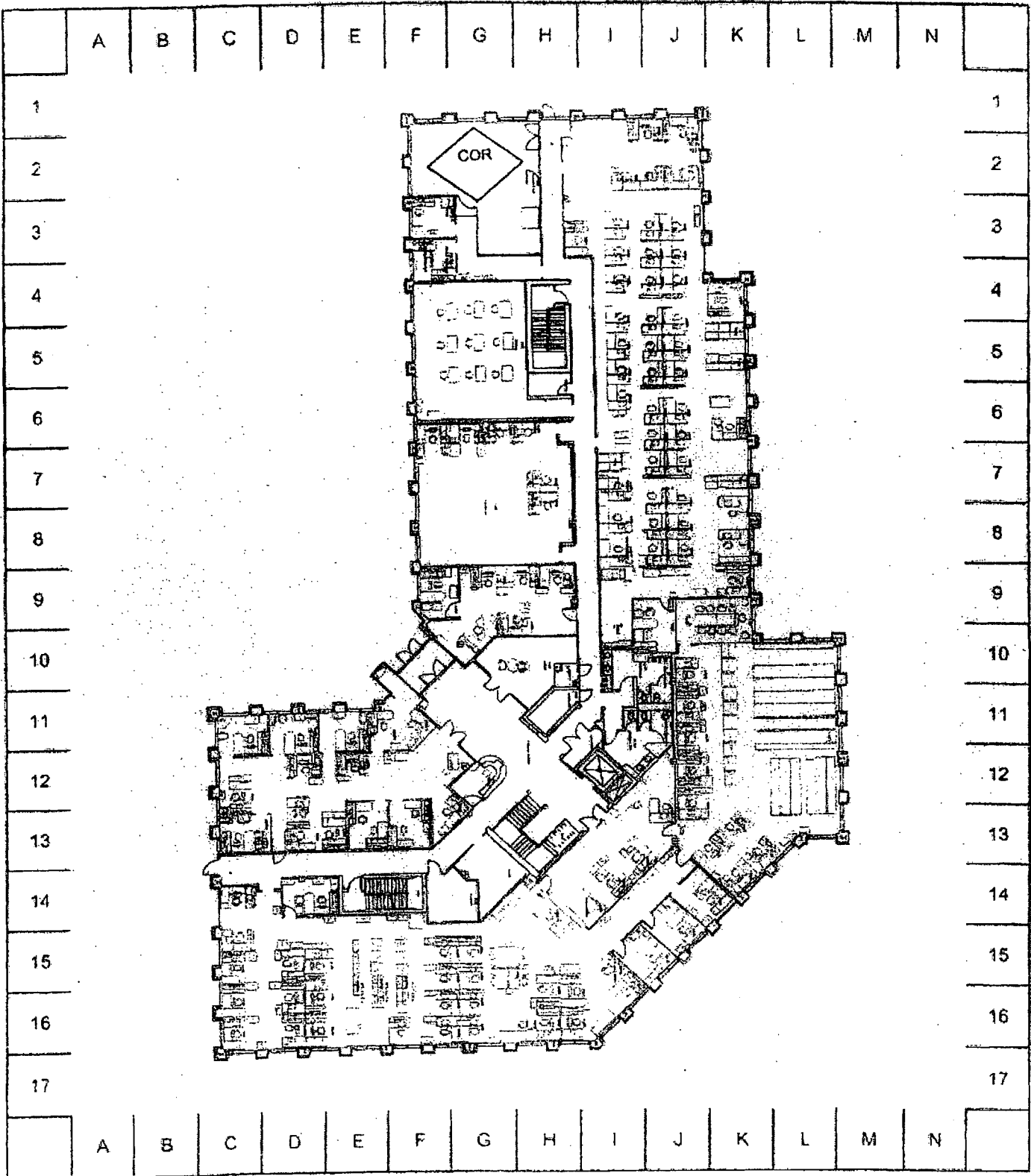
2 - NAME: SCOTT WADE TITLE: ~~DIR FAC OPERATIONS~~
Acting Director, Yucca Mountain Site Operations Office

PHONE #: (702) 794-5459 PHONE TYPE *: W

PHONE #: (702) 327-0173 PHONE TYPE *: C

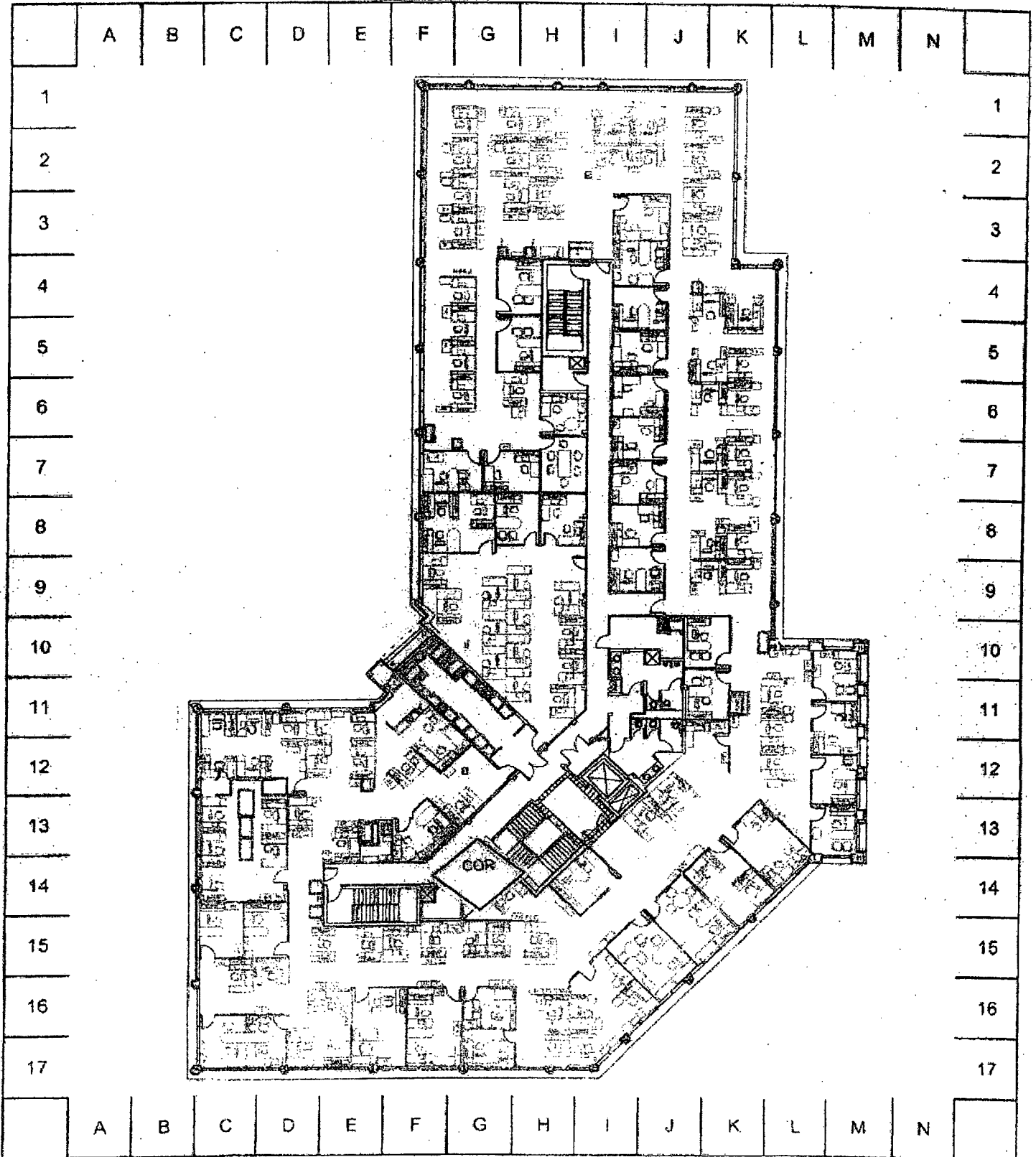
*Phone Types: Work, Mobile, Cell, Pager, Home

HAZARDOUS MATERIALS SITE MAP
1403/55942



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project DATE February 14, 2007
 ADDRESS 1180 N. Town Center Drive CITY Las Vegas PAGE 1 OF 2

HAZARDOUS MATERIALS SITE MAP
1403/55942



BUSINESS NAME U. S. Department of Energy, Yucca Mountain Project DATE February 14, 2007
 ADDRESS 1180 N. Town Center Drive CITY Las Vegas PAGE 2 OF 2