

MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION

Product Name: Orion Application Solution Reducing Agent	Catalog No. 700006	Effective Date 11/6/00
Hazardous Shipment Labeling:	DOT UN 1760 - Corrosive	IATA
Prepared By <i>J. Filipponi</i>	Title Quality Assurance Chemist	
Approved By <i>J. Filipponi</i>	Title Director Regulatory Matters	

II. HAZARDOUS INGREDIENTS (IDENTIFY INFORMATION)

Hazardous Components * Specific Chemical Identity: Common Name(s)	CAS NO.	%	OSHA PEL	ACGIH TLV	LD ₅₀ mg/Kg
Titanium Trichloride Solution (TiCl ₃)	7705-07-9	20	None Listed	None Listed	12 TD Lo (ITT-RAT)
***Deionized water (H ₂ O)	7732-18-5	80	None Listed	None Listed	190,000 (ORL-RAT)

III. PHYSICAL DATA

Boiling Point 750mm Hg	100°C	Freezing Point	<0°C
Specific Gravity (H₂O=1)	1.24	Vapor Pressure @ @ 25°C	14mmHg (Water)
pH @ 25°C	<2	Solubility In Water, % by Wt @ 25°C	Soluble
Volatiles % By Wt.	NA	Evaporation Rate (BUTYL, ACETATE = 1)	1
Vapor Density (AIR = 1)	0.7 (Water)		
Appearance and Odor	Dark purple liquid, irritating odor		

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method)	**NA	Autoignition Temperature	NA
Flammable Limits in air, % by volume:		Lower	Upper
		NA	NA
Extinguishing Media	Water, spray, or fog in flooding amounts.		
Special Fire-Fighting Procedures	Cool containers with water well after fire is out. DOT p 5800.3		
Unusual Fire and Explosion Hazards	Negligible		

*Chemicals which are not classified as hazardous per U.S. OSHA guidelines (29CFR Parts 1915.2 or 1916.2) or the Massachusetts Substance List (105CMR670.000 Appendix A) will not necessarily be listed on this form even though one or more may be a constituent of this product

** NA Not available/not applicable

*** Non-hazardous component

Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated. Safe use of the materials is the responsibility of the user.

Document No. 205507-001
Rev. J

Printed in U.S.A.
Form MSDS/1192

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V. REACTIVITY DATA

Stability: Unstable	Stable	X	Conditions to Avoid Heat
Incompatibility (Materials to avoid)			None
Hazardous Decomposition Products May release toxic or corrosive fumes of hydrogen chloride if heated to decomposition.			
Hazardous Polymerization: May Occur		Will Not Occur	Condition to Avoid None listed in literature

VI. HEALTH HAZARD DATA

Route(s) Of Entry:	Inhalation? Yes-corrosive	Skin? Yes-corrosive/poison	Ingestion? Yes-corrosive
Health Hazards (acute and chronic) Acute: sore throat, burns, eye, skin, and respiratory irritation, pulmonary edema, vomiting, and perforation of stomach and trachea. Chronic: pulmonary edema, Skin - dermatitis, Eyes- keratitis and corneal damage; gastrointestinal burns and perforation of stomach and trachea.			
Carcinogenicity: Not found on these lists.	NTP?	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure Redness of skin, coughing, labored breathing, sore throat, blurred vision.			
Medical Conditions Generally Aggravated by Exposure Heart condition, skin irritation, eye irritation, emphysema.			
Emergency And First Aid Procedures Inhalation: fresh air, artificial respiration, oxygen, keep warm, get medical aid. Eye/skin: copious water flushes, get medical attention. If ingested: give water or milk (if conscious). Do not induce vomiting; get medical attention.			

VII. PRECAUTIONS (SAFE HANDLING AND USE)

Steps To be Taken In Case Material Is Released or Spilled Wear protective gloves, glasses, lab coat, and cover spill with excess sodium bicarbonate. Scoop mixture into a large container of water, allow to stand under hood, and set aside for waste disposal.
Waste Disposal Method Consult with licensed waste hauler for proper disposal. Observe all Federal, State, and local laws when disposing of this product.
Precautions To Be Taken In Handling and Storing Keep away from heat; always wear gloves and safety goggles when handling solution. <u>NFPA Rating:</u> Scale (0-4): Health -3, Fire -0, Reactivity -1, Specific - corrosive. Components are reported in the EPA TSCA inventory.
Other Precautions Keep container well sealed. <u>SARA TITLE III:</u> Subject to reporting under Sections 311, 312 of this law. Not found on <u>CALPROP.65</u> listing.

VIII. CONTROL MEASURES

Respiratory Protection (specify type) High levels, self-contained breathing apparatus with full faceplate			
Ventilation	Local Exhaust Yes	Special None	
Ventilation	Mechanical (General) Yes	Other None	
Protective Gloves	Vinyl or rubber	Eye Protection	Safety glasses
Other Protective Clothing Or Equipment Lab coat, eye wash station			
Work/Hygienic Practices Always wash off skin with water immediately on contact and notify supervisor. Wash hands after working with this product.			