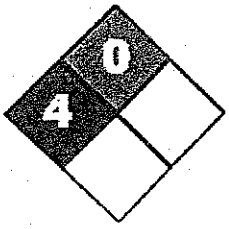
RmA#

~~8408023~~ 8408023

VanDeMark
Prosperex Chemistry • Custom Chemicals

Material Safety Data Sheet

NFPA	HMIS	PPE	Transport Symbol
	Reactivity 3		

Issuing Date 25-Jul-2007 **Revision Date** **Revision Number** 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name PHOSGENE

UN-No UN1076

Synonyms CARBONYL CHLORIDE

Recommended Use Chemical intermediate.

Supplier Address
VanDeMark Chemical Inc.
1 North Transit Road
Lockport, NY 14094
TEL: 716-433-6763

Emergency Telephone Number CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview

POISON
Very toxic by inhalation
Corrosive
The product causes burns of eyes, skin and mucous membranes
Liquid can cause burns similar to frostbite.
Contents under pressure

Appearance Clear **Physical State** Compressed liquefied gas **Odor** Grass

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects

Principle Routes of Exposure Inhalation, Skin contact, Eye contact.

Acute Toxicity

Eyes Causes burns. Corrosive to the eyes and may cause severe damage including blindness.

Skin Causes burns. Contact with product may cause frostbite.

Inhalation Poison - may be fatal if inhaled. Corrosive to respiratory system. May cause pulmonary edema. Please see Section 11. Toxicological Information for further information.

Ingestion Not an expected route of exposure. This product is a gas at normal temperature and pressure. Ingestion causes burns of the upper digestive and respiratory tract.

Chronic Effects Prolonged or repeated exposure increases the risk.

Main Symptoms See Section 11 for additional Toxicological Information.

Aggravated Medical Conditions Respiratory disorders.

Environmental Hazard See Section 12 for additional Ecological information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name Phosgene.
Chemical Family Carbonic acid chloride.
Formula $COCl_2$

Chemical Name	CAS-No	Weight %
Phosgene	75-44-5	100

4. FIRST AID MEASURES

General Advice Immediate medical attention is required. Move victim to a safe isolated area. Call 911 or emergency medical service. Show this safety data sheet to the doctor in attendance.

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Call a physician immediately.

Skin Contact	Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Consult a physician.
Inhalation	Immediate medical attention is required. Move to fresh air. Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration. If breathing is difficult, give oxygen.
Ingestion	Not an expected route of exposure. Remove from exposure, lie down. Immediate medical attention is required. Call a physician or Poison Control Center immediately. Clean mouth with water and afterwards drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting.
Notes to Physician	Overexposure to phosgene can lead to pulmonary edema. Effects of contact or inhalation may be delayed. Keep victim under observation. Treat symptomatically. Consult with the ACC Phosgene panel web site for the current version of the phosgene 1st aid and treatment options. The web site is www.phosgenepanel.org.
Protection of First-aiders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Use personal protective equipment. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

5. FIRE-FIGHTING MEASURES

Flammable Properties	Not flammable
Flash Point	Not flammable
Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Hazardous Combustion Products	Carbon oxides, Chlorine gas.
Explosion Data	
Sensitivity to mechanical impact	None
Sensitivity to static discharge	None

Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes. In the event of fire and/or explosion do not breathe fumes. Thermal decomposition can lead to release of toxic and corrosive gases/vapors. In the event of fire, cool tanks with water spray.

Protective Equipment and Precautions for Firefighters
Wear self-contained breathing apparatus and protective suit. Damaged cylinders should be handled only by specialists.

NFPA	**Health Hazard** 4	**Flammability** 0	**Stability** 3	**Physical and Chemical Hazards** -
HMIS	**Health Hazard** 4	**Flammability** 0	**Stability** 3	**Personal Precautions** K

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Do not touch or walk through spilled material. Use personal protective equipment. If you have not donned special protective clothing approved for this material, do not expose yourself to any risk of this material touching you. DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST. Look out! Corrosive material. Contents under pressure. A vapor suppressing foam may be used to reduce vapors.

Methods for Containment	Prevent further leakage or spillage if safe to do so. Isolate area until gas has dispersed. A vapor suppressing foam may be used to reduce vapors.
Methods for Cleaning Up	Use personal protective equipment. Minimize the amount spilled and supress resultant vapors. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Do NOT use water or wet materials for cleaning up.
Other Information	Use fine water spray to reduce vapors; do not put water directly on point of material release from container. Refer to protective measures listed in Sections 7 and 8.

7. HANDLING AND STORAGE

Handling	Wear personal protective equipment. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Ensure adequate ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Remove contaminated clothing and shoes. Contents under pressure. Do not puncture or incinerate.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep out of the reach of children. Keep at temperatures below 55 °C / 130 °F. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Phosgene	TWA: 0.1 ppm	(vacated) TWA: 0.1 ppm (vacated) TWA: 0.4 mg/m³ ~~TWA: 0.4 mg/m³~~ TWA: 0.1 ppm	IDLH: 2 ppm Ceiling: 0.2 ppm ~~Ceiling: 0.8 mg/m³~~ TWA: 0.1 ppm TWA: 0.4 mg/m³

NIOSH IDLH: Immediately Dangerous to Life or Health

Engineering Measures

Showers
Eyewash stations
Ventilation systems

Personal Protective Equipment

Eye/Face Protection	Face-shield.
Skin and Body Protection	Impervious clothing. Impervious gloves. Boots. Chemical resistant apron.
Respiratory Protection	Wear a positive-pressure supplied-air respirator with full facepiece.

Hygiene Measures

Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. Remove and wash contaminated clothing before re-use. Regular cleaning of equipment, work area and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear.	**Odor**	Grass.
Odor Threshold	0.4 - 1.5 ppm (EPA IRIS 2006).	**Physical State**	Compressed liquefied gas.
pH	Not applicable		
Flash Point	Not flammable	**Autoignition Temperature**	Not applicable
Decomposition Temperature		**Decomposition temperature °C**	250 °C
Boiling Point/Range	8.2°C / 46.8°F	**Melting Point/Range**	-128°C / -198°F
Flammability Limits in Air	Not flammable	**Explosion Limits**	Not applicable
Specific Gravity	1.388@20C	**Molecular Weight**	98.9
Water Solubility	Hydrolyzes.	**Solubility**	No information available.
Evaporation Rate	No information available.	**Vapor Pressure**	23.44 psia @ 20°C
Vapor Density	3.4 (air=1)	**VOC Content**	100
EPA VOC (g/l)	100%	**Viscosity**	.403cps
Partition Coefficient (n-octanol/water)	-.71		

10. STABILITY AND REACTIVITY

Stability	Stable up to approximately 200°C.
Incompatible Products	Water. Acids. Alcohols. Amines. Metals.
Conditions to Avoid	Extremes of temperature and direct sunlight. Exposure to water. Decomposes slowly on exposure to water.
Hazardous Decomposition Products	Thermal decomposition can lead to release of toxic/corrosive gases and vapors. Carbon monoxide (CO). Chlorine gas.
Hazardous Polymerization	Hazardous polymerization does not occur

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information	Very toxic by inhalation. May be fatal if inhaled.
Irritation	Causes severe irritation and or burns.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Phosgene			0.084 mg/L (Rat) 30 min

Chronic Toxicity

Chronic Toxicity — Prolonged or repeated exposure increases the risk.

Target Organ Effects — Lungs, Respiratory system.

Other Adverse Effects — Inhalation of vapor can cause pulmonary edema. Concentrations as low as 0.2 ppm has been shown to cause pulmonary edema in laboratory animals.

Human occupational exposures to high concentrations have caused severe irritation of the respiratory tract including choking, coughing, bloody sputum, and painful breathing and may cause pulmonary edema and pneumonia leading to death from circulatory and respiratory failure.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Reacts with water so no ecotoxicity data for the substance is available.

Persistence and Degradability — Reacts with water to form hydrochloric acid.

Bioaccumulation/ Accumulation — Does not bioaccumulate.

Mobility — While phosgene adsorbs strongly to relatively dry soil, it is likely to rapidly volatilize and hydrolyze when released on moist solis. Very persistent in the atmosphere. Estimated troposphere half-life is about 14 days.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method — Should not be released into the environment. This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Dispose of contents/container in accordance with local regulation.

Contaminated Packaging — Do not re-use empty containers. Dispose of in accordance with local regulations.

US EPA Waste Number — D002

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Phosgene - 75-44-5	waste number P095	Included in waste stream: K116		

Chemical Name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Phosgene - 75-44-5		waste number P095		

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Phosgene	Ignitable; Reactive

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	Phosgene
Hazard Class	2.3
Subsidiary Class	8
UN-No	UN1076
Reportable Quantity (RQ)	Phosgene, RQ kg = 4.54
Description	Phosgene(Phosgene),2.3,(8),UN1076,RQ

TDG

Proper Shipping Name	Phosgene
Hazard Class	2.3
Subsidiary Class	8
UN-No	UN1076
Description	PHOSGENE,2.3,UN1076

MEX

Proper Shipping Name	Fosgeno
Hazard Class	2.3
Subsidiary Class	8
UN-No	UN1076
Description	UN1076 Fosgeno,2.3,

ICAO Forbidden

IATA Forbidden

IMDG/IMO

Proper Shipping Name	Phosgene
Hazard Class	2.3
Subsidiary Class	8
UN-No	UN1076
EmS No.	F-C, S-U
Description	UN1076, Phosgene,2.3(8)

RID

Proper Shipping Name	Phosgene
Hazard Class	2
UN-No	UN1076
Classification Code	2TC
Description	UN1076 Phosgene,2,RID
ADR/RID-Labels	2.3 + 8 + 13

ADR

Proper Shipping Name	Phosgene
Hazard Class	2
UN-No	UN1076
Classification Code	2TC
ADR/RID-Labels	2.3 + 8

ADN

Proper Shipping Name	Phosgene
Hazard Class	2
Classification Code	2TC

14. TRANSPORT INFORMATION

Description	UN1076 Phosgene,2,
Hazard Labels	2.3 + 8
Limited Quantity	LQ0
Ventilation	VE02

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
CHINA	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values
Phosgene	75-44-5	100	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	Yes
Reactive Hazard	Yes

Clean Water Act
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Phosgene	10 lb			X

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Phosgene	10 lb	10 lb

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Phosgene	X	X	X	X	X

International Regulations

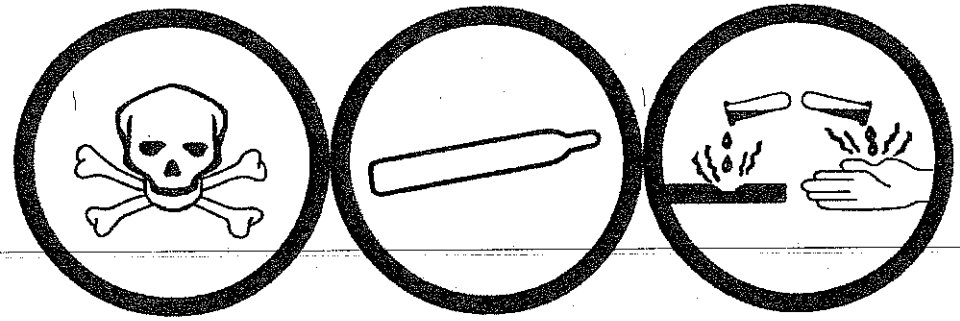
Mexico - Grade Severe risk, Grade 4

Chemical Name	Carcinogen Status	Exposure Limits
Phosgene		Mexico: TWA= 0.1 ppm Mexico: TWA= 0.4 mg/m³

Canada

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

WHMIS Hazard Class
D1A Very toxic materials
A Compressed gases
E Corrosive material



Chemical Name	NPRI
Phosgene	X

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Issuing Date 25-Jul-2007

Revision Date

Revision Note No information available

Disclaimer
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS