

0.66 mg/L

Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 02/22/2006

PRODUCT NAME: CHLORINE LIQUEFIED GAS
MSDS NUMBER: OZ35410
DATE ISSUED: 01/10/2006
SUPERSEDES: 06/10/2004
ISSUED BY: 008730

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98003-7357
425-889-5000

SUBSTANCE: CHLORINE, LIQUID (PESTICIDE)

SYNONYMS: Chlorine

PRODUCT USE: water treatment chemicals

2. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=4 FIRE=0 REACTIVITY=0
HMIS RATINGS (SCALE 0-4): HEALTH=3 FLAMMABILITY=0 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: green to yellow gas, amber liquid

PHYSICAL FORM: liquefied gas

ODOR: irritating odor, pungent odor

SIGNAL WORD: DANGER

MAJOR HEALTH HAZARDS: HIGHLY TOXIC. MAY BE FATAL IF INHALED. CAUSES BURNS TO THE RESPIRATORY TRACT, SKIN AND EYES. MAY CAUSE CHEMICAL PNEUMONIA. MAY CAUSE PERMANENT EYE DAMAGE.

separated from incompatible substances (see Section 10 of the MSDS). Avoid contact with water. Reacts with water to form a corrosive, acidic solution. The vapor is heavier than air. Store away from basements, pits or other confined spaces. Make daily inspections for leaks. Protect from physical damage.

HANDLING: Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Liquefied gas under pressure. Piping and equipment must be thoroughly cleaned of organics and moisture before use. Corrosive to most metals in the presence of moisture. Liquid lines must have suitable expansion chambers between block valves due to the high coefficient of expansion.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

CHLORINE:

1 ppm (3 mg/m³) OSHA ceiling
0.5 ppm (1.5 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
1 ppm (3 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
0.5 ppm ACGIH TWA
1 ppm ACGIH STEL

VENTILATION: Do not use in poorly ventilated or confined spaces. Use closed systems when possible. Provide local exhaust ventilation where vapor may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear safety glasses with side shields. Wear chemical safety goggles with a faceshield to protect against skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing. When responding to accidental release of unknown concentrations, wear one-piece, total encapsulating suit of Butyl coated nylon or equivalent. **GLOVES:** Wear chemical resistant, insulated gloves such as Perfect Fit NL-56(TM) or Best 6781 R(TM).

PROTECTIVE MATERIAL TYPES: Perfect Fit NL-56(TM), Best 6781R(TM), Best Nitri Solve 727(TM), Tychem 10000 (TM)

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: 10 ppm

RESPIRATOR: Where vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator is required. When an air-purifying respirator is not adequate or for spills and/or emergencies of unknown concentrations, a NIOSH approved self-contained breathing apparatus or airline respirator with full-face piece is required. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	liquid
COLOR:	green to yellow gas, amber liquid
PHYSICAL FORM:	liquefied gas
ODOR:	irritating odor, pungent odor
MOLECULAR WEIGHT:	70.91
MOLECULAR FORMULA:	C12
BOILING POINT:	-29.27 F (-34.04 C)
FREEZING POINT:	-150 F (-101 C)

VAPOR PRESSURE: 5830 mmHg @ 25 C
VAPOR DENSITY (air=1): 2.4
SPECIFIC GRAVITY (water=1): 1.4 @ 15.6 C
DENSITY: 11.7 lbs/gal @ 15.6 C
WATER SOLUBILITY: 0.7% @ 20 C
PH: Not applicable
VOLATILITY: 100%
ODOR THRESHOLD: 0.31 ppm approximate
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Dry material is highly reactive with titanium and tin. Reacts with most metals at high temperatures or in the presence of moisture. Avoid contact with water. Reacts with water to form corrosive, acidic solution (hydrochloric acid). May react explosively with organic materials.

INCOMPATIBILITIES: ammonia, elemental metals, metal hydrides, carbides, nitrides, oxides, phosphides, sulfides, easily oxidized materials, organic materials, (e.g. petrochemicals, oils, greases), unstable and reactive compounds

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: None known.

POLYMERIZATION:

Will not polymerize.

11. TOXICOLOGICAL INFORMATION

CHLORINE, LIQUID (PESTICIDE):

TOXICITY DATA:

293 ppm/1 hour(s) inhalation-rat LC50; 137 ppm/1 hour(s) inhalation-mouse LC50

LOCAL EFFECTS:

Corrosive; inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Toxic: inhalation

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: skin disorders, respiratory system (including asthma and other breathing disorders)

ADDITIONAL DATA: This material has tested positive in one or more in vitro mutagenicity assays.

HEALTH EFFECTS:

INHALATION:

ACUTE EXPOSURE:

Brief exposure may cause serious adverse effects, even death. Excessive exposure may produce severe irritation of the nose, throat and lungs. May cause pulmonary edema. The hazard at different concentration is reported to be as follows: 0.2 - 0.5 ppm (No immediate toxic effects); 1-3 ppm (Definite odor with irritation of eye and nose); 5-8 ppm (Throat, eye and mucous membrane irritation); 30 ppm (Intense coughing fits); 34-51 ppm (Lethal in 1 to 1.5 hours exposure); 40-60 ppm (Exposure for 30-60 minutes may cause upper

respiratory irritation, pulmonary edema, or bronchopneumonia); 100 ppm (May be lethal after 50 minutes exposure (estimated)); 430 ppm (Lowest concentration known to cause lethality after 30 minutes of exposure); 1000 ppm (May be fatal within a few deep breaths). Odor does not provide an adequate warning of exposure. It is not known whether humans develop tolerance.

CHRONIC EXPOSURE:

Long term overexposure may produce upper airway changes leading to an increased prevalence of colds, shortness of breath, and reactive airway dysfunction syndrome.

SKIN CONTACT:

ACUTE EXPOSURE:

Brief contact may cause skin burns and permanent skin damage. Skin contact with compressed liquid or escaping gas can cause frostbite.

CHRONIC EXPOSURE: No known chronic effects.

EYE CONTACT:

ACUTE EXPOSURE:

May cause burns and permanent injury to eye tissue. May cause permanent impairment of vision or blindness. Eye contact with compressed liquid or escaping gas can cause frostbite.

CHRONIC EXPOSURE: No known chronic effects.

INGESTION:

ACUTE EXPOSURE:

Not applicable.

CHRONIC EXPOSURE:

Not applicable.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 0.07-0.15 ppm 96 hour(s) LC50 Fathead Minnow; 0.44 mg/L 96 hour(s) LC50 Bluegill. This material is highly toxic to aquatic organisms on an acute basis.

INVERTEBRATE TOXICITY: 30-150 ug/L 48 hour(s) LC50 Daphnia

FATE AND TRANSPORT:

BIODEGRADATION: This material is an element and not subject to biodegradation.

PERSISTENCE: The atmospheric half-life and lifetime of this material due to photolysis is estimated at 10 and 14 minutes, respectively. The half-life of free residual material in fresh water has been estimated at 1.3 to 5 hours.

BIOCONCENTRATION: This material is believed not to bioaccumulate.

OTHER ECOLOGICAL INFORMATION: This material has exhibited toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Use or process if possible. Chlorine may be absorbed into an alkaline solution such as caustic soda, soda ash or hydrated lime. Dispose in

accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Chlorine
ID NUMBER: UN1017
HAZARD CLASS OR DIVISION: 2.3
LABELING REQUIREMENTS: 2.3; 8
ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B
MARINE POLLUTANT: CHLORINE
DOT HAZARDOUS SUBSTANCE(S):
Chlorine 10 lb(s) (4.54 kg(s))

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Chlorine
UN NUMBER: UN1017
CLASS: 2.3; 8
OTHER INFORMATION: Emergency Response Assistance Plan (ERAP) may be required.

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
CHLORINE: 10 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
CHLORINE: 100 LBS TPQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):
CHLORINE

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. Refer to Section 3.

OSHA PROCESS SAFETY (29CFR1910.119):
CHLORINE: 1500 LBS TQ

STATE REGULATIONS:
California Proposition 65: This product may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Customer Service.

NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:
REPORTING REQUIREMENT:
CHLORINE 7782-50-5 99.5-100%

RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST:
CHLORINE 7782-50-5 99.5-100%

SPECIAL HEALTH HAZARD SUBSTANCE LIST:

Not regulated.

PENNSYLVANIA RIGHT TO KNOW: REPORTING REQUIREMENT:
CHLORINE 7782-50-5 99.5-100%

HAZARDOUS SUBSTANCE LIST:
CHLORINE 7782-50-5 99.5-100%

ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:
CHLORINE 7782-50-5 99.5-100%

SPECIAL HAZARDOUS SUBSTANCE LIST:
Not regulated.

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

WHMIS CLASSIFICATION: Not a registered pesticide.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not a registered pesticide. This material will not be sold in Canada.

For Additional Information:

Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

NOTICE

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Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

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