



# Chlorine

Version 6

Revision Date 02/15/2011

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## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Chlorine  
 Product code :  
 MSDS Number : 10000019  
 Synonyms : None  
 Chemical Family : Halogen  
 Molecular formula : Cl<sub>2</sub>  
 Product Use Description : Chlorinating and oxidizing agent, Water treatment chemical, pharmaceutical, Synthesis, Disinfectants and general biocidal products, Plastics

### Company

Olin Chlor Alkali Products  
 490 Stuart Road, NE  
 Cleveland, Tennessee 37312

Pioneer Americas, LLC  
 d/b/a Olin Chlor Alkali Products  
 490 Stuart Road, NE  
 Cleveland, Tennessee 37312

Olin Canada ULC  
 d/b/a Olin Chlor Alkali Products  
 2020 University, Suite 2190  
 Montreal, Quebec H3A 2A5

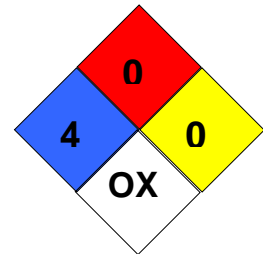
Emergency Phone Number : **US: 1-800-424-9300 - CHEMTREC**  
**CANADA: 1-800-567-7455**

## SECTION 2. HAZARDS IDENTIFICATION

**HMIS Classification** : Health Hazard: 3  
 Flammability: 0  
 Physical hazards: 0

HMIS	
Health Hazard	3
Flammability	0
Physical hazards	0

**NFPA Classification** : Health Hazard: 4  
 Fire Hazard: 0  
 Reactivity Hazard: 0  
 Specific hazards: OX



### Emergency Overview

OSHA Hazards : CORROSIVE, TOXIC BY INHALATION., COMPRESSED GAS, OXIDIZER  
 Immediately Dangerous to Life or Health : 10 ppm

### Potential Health Effects

Primary Routes of Entry : Ingestion, Eyes, Inhalation, Skin Absorption  
 Aggravated Medical Condition : Asthma, Respiratory disorders, Heart disease  
 Inhalation : Toxic by inhalation.  
 Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.  
 Inhaled corrosive substances can lead to a toxic edema of the lungs.  
 Higher exposure may cause lung edema, circulatory collapse and unconsciousness.



**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

There is no evidence that acute inhalation of chlorine at low to moderate levels will cause permanent lung damage. At high levels, chlorine is corrosive to the respiratory tract and may cause lung damage.

**Skin** : May cause skin irritation and/or dermatitis.  
Contact with liquid chlorine may cause burns with prolonged contact causing destruction of the dermis with impairment of the skin at site of contact to regenerate.

**Eyes** : Causes serious eye irritation.  
Blurred vision  
May cause permanent eye injury.

**Ingestion** : Ingestion or inhalation of high concentrations may cause injuries to gastrointestinal tract, liver, kidneys and central nervous system.  
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.  
Ingestion is not an applicable route of exposure for gases.

**Chronic Exposure** : Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.  
**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.  
**ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Hazardous components**

Component	CAS-No.	Weight %
chlorine	7782-50-5	98.00 - 100.00

**SECTION 4. FIRST AID MEASURES**

**First aid procedures**

**Eye contact** : • IMMEDIATELY flush eyes with plenty of water holding eyelids apart for at least 15-20 minutes  
 • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.  
 • Get medical attention IMMEDIATELY.

**Skin contact** : • Take off contaminated clothing.  
 • Rinse skin immediately with plenty of water for 15-20 minutes.  
 • Call a poison control center or doctor for treatment advice.

**Ingestion** : • Call a poison control center or doctor immediately for treatment advice.  
 • Have person sip a glass of water if able to swallow.  
 • Do not induce vomiting unless told to do so by the poison control center

**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

- or doctor.
- Do not give anything by mouth to an unconscious person.
- Inhalation : • Move person to fresh air.  
 • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.  
 • Call a physician or poison control center IMMEDIATELY.
- General advice : • Have the product container or label with you when calling a poison control center or doctor or going for treatment.  
 • Show this safety data sheet to the doctor in attendance.
- Notes to physician**
- Comments : • Probable mucosal damage may contraindicate the use of gastric lavage.

**SECTION 5. FIRE-FIGHTING MEASURES****Flammable properties**

- Flash point : not applicable  
 Lower explosion limit : not applicable  
 Upper explosion limit : not applicable

**Fire fighting**

- Suitable extinguishing media : • Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : • Direct water spray  
 • Direct water spray jet
- Further information : • Contact with reactive metals e.g., aluminum, zinc and tin may result in the generation of flammable hydrogen gas.  
 • Cool containers / tanks with water spray.  
 • Water spray on active leak may promote accelerated corrosion of container and accelerate rate of leakage

**Protective equipment and precautions for firefighters**

- Specific hazards during fire fighting : • Corrosive  
 • compressed liquefied gas  
 • poison
- Special protective equipment for fire-fighters : • Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots gloves, hard hat, splash-proof goggles, full face shield and impervious clothing, i.e. chemically impermeable suit.  
 • Compatible materials for response to this material are neoprene and butyl rubber.  
 • For response to Chlorine gas it is recommended to use as a minimum level "B" protection that is compatible to Chlorine.  
 • For Liquid spills it is recommended to utilize as a minimum enhanced level "B" (Enhanced Level "B" is the addition of a splash hood).



**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

- Responders can reference Chlorine Institute pamphlet #65 on PPE.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions : Restrict access to affected area.  
 Use personal protective equipment.  
 Use NIOSH approved respiratory protection.  
 Keep people away from and upwind of spill/leak.  
 Vapours can accumulate in low areas  
 In the case of hazardous fumes, wear self contained breathing apparatus.
- Methods for containment /  
 Methods for cleaning up : Do not allow material to contaminate ground water system.  
 Try to prevent the material from entering drains or water courses.  
 Prevent further leakage or spillage if safe to do so.  
 Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains.  
 The liquid form is heavier than water. (Will form hazardous reaction products)  
 Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.  
 Retain and dispose of contaminated wash water.
- Additional advice : • Dispose of as hazardous waste in compliance with local, province, state and federal regulations.  
 • You are requested to contact the emergency numbers listed below before beginning any such operation.

FOR ALL ACCIDENTS, CALL CHEMTREC AT 800-424-9300 OR CANADA AT 1-800-567-7455.

**SECTION 7. HANDLING AND STORAGE**

**Handling**

- Handling : Personnel working with this chemical should be trained on its hazards.  
 Avoid inhalation, ingestion and contact with skin and eyes.

**Storage**

- Requirements for storage areas and containers : Keep in a dry, cool and well-ventilated place.  
 Store at temperatures not exceeding : 131 F (55 C)  
 Other data : For the above specified temperature the system pressure is 225 psig (1551kPa)

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Exposure Guidelines**

**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis



**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

chlorine	7782-50-5	TWA	0.5 ppm 1.5 mg/m3	1996-05-18	ACGIH
		STEL	1 ppm 2.9 mg/m3	1996-05-18	ACGIH
		CEIL	1 ppm 3 mg/m3	1993-06-30	OSHA P1

**Engineering measures**

Engineering measures : Use local exhaust ventilation to maintain levels to below the PEL.

**Personal protective equipment**

- Eye protection : Ensure that eyewash stations and safety showers are close to the workstation location.
- Skin and body protection : Wear as appropriate: Full protective suit Hard hat with brim Boots. Wear protective gloves and eye/face protection. Refer to Chlorine Institute Pamphlet #65 for specific personal protection equipment requirements
- Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Wear NIOSH approved full-face respirator equipped with chemical cartridges for chlorine gas.
- Hygiene measures :
  - General industrial hygiene practice.

**Suitable material**

**Boots.**

- Neoprene
- butyl-rubber

**Gloves**

- Neoprene
- butyl-rubber

**Protective suit**

- Chemical Resistant Suit

The listed materials are guidelines only and there are numerous PPE alternatives depending on the site specifics of where the chemical is used. You should always consult with your PPE supplier for the correct tested material.

**Before using this chemical you should be aware of its hazards and be knowledgeable of emergency procedures in the event of a spill.**

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**

- Form : compressed liquefied gas
- Color : yellow green
- Odor : pungent

**Safety data**

- Flash point : not applicable
- Lower explosion limit : not applicable
- Upper explosion limit : not applicable
- Oxidizing properties : yes
- Autoignition temperature : not applicable
- Molecular Weight : 71 g/mol
- pH : not applicable
- Melting point/range : -150 F (-101 C) at 760 mmHg

**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

Freezing point	: no data available
Boiling point/boiling range	: -29 F (-34 C) at 760 mmHg
Vapor pressure	: 779 kPa at 77 F (25 C) 4,800 mmHg at 77 F (25 C) 113 psia at 77 F (25 C)
Density	: 0.7632 lb/ft3 at 32 F (0 C) 53.51 psia
Bulk density	: 88.76 lb/ft3 at 59.8 F (15.6 C)
Water solubility	: completely miscible
Specific gravity	: not applicable
Evaporation rate	: Heat of vaporization: 123.9 BTU per pound

**SECTION 10. STABILITY AND REACTIVITY**

Conditions to avoid	: • Titanium will react vigorously, resulting in spontaneous ignition, when contacted by Dry Chlorine. • Combustion will be supported in carbon steel systems and equipment containing a Chlorine environment at temperatures greater than 480 °F. • Properly purge systems and equipment PRIOR to conducting Hot Work.
Materials to avoid	: • Reducing agents, Organic materials, Alkalis
Hazardous decomposition products	: hydrogen chloride hypochlorous acid
Thermal decomposition	: Stable under normal conditions.
Hazardous polymerization	: Does not occur.

**SECTION 11. TOXICOLOGICAL INFORMATION****Human Threshold Response**

Odor threshold	: approximately 1.7 mg/m3 (0.3 ppm)
Irritation Threshold	: approximately 0.5 ppm
Immediately Dangerous to Life or Health	: 10 ppm

**Animal Toxicology**

Acute oral toxicity	: LD50 not applicable Product is a gas at room temperature.
Acute dermal toxicity	: LD50 not applicable Product is a gas at room temperature.
Acute inhalation toxicity	: LC50 rat Exposure time: 1 Hour Dose: 293 ppm

**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

**SECTION 12. ECOLOGICAL INFORMATION**

Acute Fish toxicity : LC50 Bluegill sunfish: 0.44 mg/L  
Exposure time: 96 Hour

LC50 Perca flavescens (Yellow Perch): 0.88 mg/L  
Exposure time: 1 Hour

LC50 Ictalurus catus (catfish): 0.07 mg/L  
Exposure time: 96 Hour

LC50 Daphnia magna (Water flea): 0.017 mg/L  
Exposure time: 46 Hour

LC50 Crassostrea gigas (Pacific oyster): 637.50 mg/L  
Exposure time: 1 Hour

LC50 Growth Myriophyllum spicatum (Water-milfoil): 20.00 mg/L  
Exposure time: 2,304 Hour

**SECTION 13. DISPOSAL CONSIDERATIONS**

Waste Classification : If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following: D003, D001

Further information : • If this product becomes a hazardous waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.  
• Dispose of as hazardous waste in compliance with local, province, state and federal regulations.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, PROVINCE, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NON HAZARDOUS WASTES.

**SECTION 14. TRANSPORT INFORMATION**

<b>DOT</b>	Proper shipping name	: Chlorine
	UN-Number	: UN1017
	Class	: 2.3
	Hazard Labels/Placard	: 2.3 (8, 5.1)
	Emergency Response	: 124
	Guidebook Number	
	Reportable Quantity	: 10 LB (Per 49 CFR 172.101, Appendix) Hazard zone B
<b>TDG CLR</b>	Proper shipping name	: Chlorine
	UN-Number	: UN1017
	Class	: 2.3
	Hazard Labels/Placard	: 2.3 (8)



**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

**IATA** UN-Number : UN1017  
 Class : 2.3  
 Not permitted for transport

**IMDG** UN-Number : UN1017  
 Description of the goods : Chlorine  
 Class : 2.3  
 IMDG-Labels : 2.3 (8)  
 Marine pollutant : yes

See regulations for further information.

FOR ALL ACCIDENTS, CALL CHEMTREC AT 800-424-9300 OR CANADA AT 1-800-567-7455.

**SECTION 15. REGULATORY INFORMATION**

**CANADIAN CLASSIFICATION**

**WHMIS Classification** : A Compressed Gas  
 D1A Very Toxic Material Causing Immediate and Serious Toxic Effects  
 D2A Very Toxic Material Causing Other Toxic Effects  
 E Corrosive Material

**NPRI Components** : Chlorine 7782-50-5  
 This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**US CLASSIFICATION**

**OSHA Hazards** : Corrosive, Toxic by inhalation., Compressed Gas, Oxidizer

**SARA 302 Reportable Quantity** : 10 lbs

**SARA 311/312 Hazards** : Acute Health Hazard  
 Chronic Health Hazard  
 Fire Hazard  
 Sudden Release of Pressure Hazard  
 Reactivity Hazard

**EPCRA - Emergency Planning and Community Right-to-Know Act**

**SARA 302 Components** : Chlorine 7782-50-5

**SARA 313 Components** : Chlorine 7782-50-5

**US STATE REGULATIONS**

**Massachusetts Right To Know Components** : Chlorine 7782-50-5  
 1991-07-01



**Chlorine**

Version 6

Revision Date 02/15/2011

Print Date 02/15/2011

<b>Pennsylvania Right To Know Components</b>	: Chlorine 1991-07-01	7782-50-5
<b>New Jersey Right To Know Components</b>	: Chlorine 1991-07-01	7782-50-5
<b>California Prop 65 Components</b>	: This product is not listed, but it may contain elements 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 Olin Technical Services (800-299-6546).	

**GLOBAL INVENTORIES**

The components of this product are reported in the following inventories:

<b>EINECS</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	On TSCA Inventory
<b>AICS</b>	On the inventory, or in compliance with the inventory
<b>DSL</b>	All components of this product are on the Canadian DSL list.
<b>ENCS</b>	On the inventory, or in compliance with the inventory
<b>KECI</b>	On the inventory, or in compliance with the inventory
<b>PICCS</b>	On the inventory, or in compliance with the inventory
<b>IECSC</b>	On the inventory, or in compliance with the inventory
<b>NZIoC</b>	On the inventory, or in compliance with the inventory

**SECTION 16. OTHER INFORMATION**

**Further information**

The information provided in this Safety Data Sheet 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

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