


## 1. Identification

<b>Product identifier</b>	<b>CHLORINE</b>	
<b>Other means of identification</b>	Not available.	
<b>Recommended use</b>	Chlorinating and oxidizing agent, Water treatment chemicals, pharmaceutical, Synthesis, Disinfectants and general biocidal products, Plastics	
<b>Recommended restrictions</b>	None known.	
<b>Manufacturer / Importer / Supplier / Distributor information</b>		
<b>Company name</b>	Olin Chlor Alkali Products	
<b>Address</b>	490 Stuart Road, NE Cleveland, TN 37312	
<b>Company name</b>	Pioneer Americas, LLC (d/b/a Olin Chlor Alkali Products)	
<b>Address</b>	490 Stuart Road, NE Cleveland, TN 37312	
<b>Company name</b>	Olin Canada ULC (d/b/a Olin Chlor Alkali Products)	
<b>Address</b>	2020 University, Suite 2190 Montreal, Quebec H3A 2A5	
<b>General Information</b>		
<b>Telephone</b>	(888) 658-MSDS (6737)	
<b>Website</b>	olinchloralkali.com	
<b>Contact person</b>	ORC MSDS Control Group	
<b>Emergency phone number</b>	CHENTREC US: 1-800-424-9300	Canada: 1-800-567-7455

## 2. Hazard(s) identification

<b>Physical hazards</b>	Oxidizing gases	Category 1
	Gases under pressure	Liquefied gas
<b>Health hazards</b>	Acute toxicity, inhalation	Category 2
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure	Category 1 (Lung)
<b>OSHA defined hazards</b>	Not classified.	
<b>Label elements</b>		

<b>Signal word</b>	Danger
<b>Hazard statement</b>	May cause or intensify fire; oxidizer. Contains gas under pressure; may explode if heated. Causes severe skin burns and eye damage. Fatal if inhaled. May cause respiratory irritation. Causes damage to organs (lung) through prolonged or repeated exposure.
<b>Precautionary statement</b>	
<b>Prevention</b>	Keep/Store away from clothing/combustible materials. Keep reduction valves/valves and fittings free from oil and grease. Do not breathe gas. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection. Wash thoroughly after handling.
<b>Response</b>	In case of fire: Stop leak if safe to do so. Get medical advice/attention if you feel unwell. If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment is urgent. Wash contaminated clothing before re-use.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.

classified (HNOC)

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 1

Supplemental information

Hazard symbol



Hazard statement Very toxic to aquatic life.

Precautionary statement

Prevention Avoid release to the environment.

Response Collect spillage.

### 3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
CHLORINE		7782-50-5	98-100

### 4. First-aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Get medical attention immediately!
Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately! Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Ingestion is not a typical route of exposure for gases or liquefied gases. Contact with liquid form may cause frostbite. Immediately call a poison control center or doctor for treatment advice.
Most important symptoms/effects, acute and delayed	Contact with this material will cause burns to the skin, eyes and mucous membranes. Unconsciousness. Cough, shortness of breath, headache, nausea, vomiting. May cause lung damage.
Indication of immediate medical attention and special treatment needed	For liquid contact, treat the affected person for frostbite if necessary. If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately. Provide general supportive measures and treat symptomatically. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### 5. Fire-fighting measures

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	Direct water spray. Direct water spray jet.
Specific hazards arising from the chemical	May cause fire or explosion; strong oxidizer. Contents under pressure. Pressurized container may explode when exposed to heat or flame. Contact with reactive metals e.g., aluminum, zinc and tin may result in the generation of flammable hydrogen gas. Water used for fire extinguishing, which has been in contact with the product, may be corrosive. Water spray on active leak may promote accelerated corrosion of container and accelerate rate of leakage.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. 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.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Remove pressurized gas cylinders from the immediate vicinity. Cylinders can burst violently when heated, due to excess pressure build-up. Cool containers / tanks with water spray. Evacuate area and fight fire remotely due to the risk of explosion.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Keep people away from and upwind of spill/leak. Keep out of low areas. Keep unnecessary personnel away. Ventilate closed spaces before entering them. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained.

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). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Responders can reference Chlorine Institute pamphlet #65 on PPE.

### Methods and materials for containment and cleaning up

Extinguish all flames in the vicinity. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Ventilate well, stop flow of gas or liquid if possible. If possible, turn leaking containers so that gas escapes rather than liquid. Dike far ahead of spill for later disposal. Isolate area until gas has dispersed. Neutralize spilled material with crushed limestone, soda ash or lime. Collect spillage.

Never return spills to original containers for re-use. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

### Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Contact local authorities in case of spillage to drain/aquatic environment.

## 7. Handling and storage

### Precautions for safe handling

Avoid heat, sparks, open flames and other ignition sources. Keep away from clothing and other combustible materials. Use only chlorine-compatible lubricants. Do not use greases and oils. Do not breathe gas. Do not get in eyes, on skin, on clothing. Use in a sealed system and/or a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment.

### Conditions for safe storage, including any incompatibilities

Contents under pressure. Keep away from heat, sparks and open flame. Secure cylinders in an upright position at all times, close all valves when not in use. Store in a well-ventilated place. Store away from incompatible materials.

Store at temperatures not exceeding 55°C/131°F. For the above specified temperature the system pressure is 225 psig (1551kPa).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
CHLORINE (CAS 7782-50-5)	Ceiling	3 mg/m <sup>3</sup>
		1 ppm

#### US. ACGIH Threshold Limit Values

Material	Type	Value
CHLORINE (CAS 7782-50-5)	STEL	1 ppm
	TWA	0.5 ppm

### Biological limit values

No biological exposure limits noted for the ingredient(s).

### Exposure guidelines

Check State and local regulations for other applicable exposure limits.

### Appropriate engineering controls

Should be handled in closed systems, if possible. Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation. Eye wash facilities and emergency shower must be available when handling this product.

### Individual protection measures, such as personal protective equipment

#### Eye/face protection

Wear goggles/face shield. Gas-proof goggles are recommended.

#### Skin protection

##### Hand protection

Wear cold insulating gloves. Suitable gloves can be recommended by the glove supplier.

##### Other

Wear appropriate chemical resistant clothing.

#### Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

#### Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

considerations

measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

<b>Appearance</b>	Compressed liquefied gas.
<b>Physical state</b>	Gas Compressed, liquified.
<b>Form</b>	Liquefied gas.
<b>Color</b>	Yellow green.
<b>Odor</b>	Pungent.
<b>Odor threshold</b>	1.7 ppm
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	-149.8 °F (-101 °C) (1 atm)
<b>Initial boiling point and boiling range</b>	-29.27 °F (-34.04 °C) (1 atm)
<b>Flash point</b>	Not applicable.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not applicable.
<b>Flammability limit - lower (%) temperature</b>	Not applicable.
<b>Flammability limit - upper (%)</b>	Not applicable.
<b>Flammability limit - upper (%) temperature</b>	Not applicable.
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	113 psia (25°C/77°F) 779 kPa (25 °C/77 °F) 4800 mm Hg (25°C/77°F)
<b>Vapor density</b>	2.5
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	0.73 g/100g H <sub>2</sub> O (20°C/68°F) (760 mm Hg)
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Bulk density</b>	88.76 lb/ft <sup>3</sup> 59.8 °F (15.6 °C)
<b>Density</b>	0.76 lb/ft <sup>3</sup> 32 °F (0 °C) 53.51 psia
<b>Heat of vaporization</b>	123.9 BTU/lb
<b>Molecular formula</b>	Cl <sub>2</sub>
<b>Molecular weight</b>	70.906 g/mol

## 10. Stability and reactivity

<b>Reactivity</b>	Contact with combustible material may cause fire.
<b>Chemical stability</b>	Stable under normal temperature conditions and recommended use.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

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 (248.9 °C). Properly purge systems and equipment PRIOR to conducting Hot Work.

**Incompatible materials** Reducing agents. Organic material. Alkalis.  
**Hazardous decomposition products** Hydrogen chloride. Hypochlorous acid.

## 11. Toxicological information

### Information on likely routes of exposure

**Ingestion** Causes digestive tract burns.  
**Inhalation** Fatal if inhaled. Irritating to respiratory system.  
**Skin contact** Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.  
**Eye contact** Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. Can cause blurred vision, redness, pain, severe tissue burns and eye damage.

**Symptoms related to the physical, chemical and toxicological characteristics** Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting. May cause lung damage. Unconsciousness.

### Information on toxicological effects

**Acute toxicity** Fatal if inhaled.  
 Irritation Threshold: approximately 0.5 ppm  
 Immediately Dangerous to Life or Health: 10.0 ppm.

Product	Species	Test Results
CHLORINE (CAS 7782-50-5)		
<b>Acute Inhalation LC50</b>	Rat	293 ppm, 1 hr
<b>Skin corrosion/irritation</b>	Causes severe skin burns.	
<b>Serious eye damage/eye irritation</b>	Causes serious eye damage.	
<b>Respiratory sensitization</b>	No data available.	
<b>Skin sensitization</b>	No data available.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
<b>Reproductive toxicity</b>	No data available.	
<b>Specific target organ toxicity - single exposure</b>	Not available.	
<b>Specific target organ toxicity - repeated exposure</b>	Causes damage to organs (lungs) through prolonged or repeated exposure.	
<b>Aspiration hazard</b>	Due to the physical form of the product it is not an aspiration hazard.	
<b>Chronic effects</b>	Prolonged exposure may cause chronic effects.	
<b>Further information</b>	Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure.	

## 12. Ecological information

**Ecotoxicity** Very toxic to aquatic life with long lasting effects.

Product	Species	Test Results
CHLORINE (CAS 7782-50-5)		
<b>Aquatic Crustacea</b>	LC50	Pacific oyster ( <i>Crassostrea gigas</i> ) 637.5 mg/l, 1 hours Water flea ( <i>Daphnia magna</i> ) 0.017 mg/l, 46 hours
<b>Fish</b>	LC50	Bluegill ( <i>Lepomis macrochirus</i> ) 0.44 mg/l, 96 hours Bullhead, catfish ( <i>Ictalurus sp.</i> ) 0.07 mg/l, 96 hours Yellow perch ( <i>Perca flavescens</i> ) 0.88 mg/l, 1 hours
<b>Persistence and degradability</b>	No data available.	
<b>Bioaccumulative potential</b>	Will not bio-accumulate.	

Other adverse effects No data available.

### 13. Disposal considerations

**Disposal instructions** Return the empty cylinder to the supplier. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

**Waste from residues / unused products** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.

**Contaminated packaging** Since emptied cylinders may retain product residue, follow label warnings even after cylinder is emptied.

### 14. Transport information

#### DOT

**UN number** UN1017  
**UN proper shipping name** Chlorine  
**Transport hazard class(es)** 2.3  
**Subsidiary class(es)** 5.1, 8  
**Packing group** Not available.  
**Environmental hazards**  
**Marine pollutant** Yes  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**Special provisions** 2, B9, B14, N86, T50, TP19  
**Packaging exceptions** None  
**Packaging non bulk** 304  
**Packaging bulk** 314, 315

#### IATA

**UN number** UN1017  
**UN proper shipping name** Chlorine  
**Transport hazard class(es)** 2.3  
**Subsidiary class(es)** 5.1, 8  
**Packaging group** Not available.  
**Environmental hazards** No  
**Labels required** Not available.  
**ERG Code** 2CP  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

#### IMDG

**UN number** UN1017  
**UN proper shipping name** CHLORINE  
**Transport hazard class(es)** 2.3  
**Subsidiary class(es)** 5.1, 8  
**Packaging group** Not available.  
**Environmental hazards**  
**Marine pollutant** Yes  
**Labels required** Not available.  
**EmS** F-C, S-U  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

### 15. Regulatory information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

CHLORINE (CAS 7782-50-5)

LISTED

**Hazard categories**  
 Immediate Hazard - Yes  
 Delayed Hazard - Yes  
 Fire Hazard - No  
 Pressure Hazard - Yes  
 Reactivity Hazard - Yes

**SARA 302 Extremely hazardous substance** Yes

**SARA 311/312 Hazardous chemical** Yes

**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
CHLORINE	7782-50-5	98-100

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

CHLORINE (CAS 7782-50-5)

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

CHLORINE (CAS 7782-50-5)

**Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)** Hazardous substance

**Safe Drinking Water Act (SDWA)** 4 mg/l  
4.0 mg/l

**Food and Drug Administration (FDA)** Not regulated.

**US state regulations**

**US. Massachusetts RTK - Substance List**

CHLORINE (CAS 7782-50-5)

**US. New Jersey Worker and Community Right-to-Know Act**

CHLORINE (CAS 7782-50-5) 100 lbs

**US. Pennsylvania RTK - Hazardous Substances**

CHLORINE (CAS 7782-50-5)

**US. Rhode Island RTK**

CHLORINE (CAS 7782-50-5)

**US. California Proposition 65**

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 Safe Drinking Water and Toxic Enforcement Act. For additional information, contact Olin Technical Services (800-299-6546).

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Not listed.

**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**16. Other information, including date of preparation or last revision**

**Issue date** 23-August-2013



**List of abbreviations**

LD50: Lethal Dose, 50%.  
LC50: Lethal Concentration, 50%.  
EC50: Effective concentration, 50%.  
TWA: Time weighted average.

**References**

EPA: AQUIRE database  
HSDB® - Hazardous Substances Data Bank  
US. IARC Monographs on Occupational Exposures to Chemical Agents  
IARC Monographs. Overall Evaluation of Carcinogenicity  
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

**Disclaimer**

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.