



# Aqua Chemical Supply, Inc.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTITY: CHLORINE, LIQUIFIED GAS

Manufacturer/Supplier/Distributor:

Univar  
17425 NE Union Hill Road  
Redmond, WA 98052

Emergency telephone number: For emergency assistance involving chemicals call  
CHEMTREC day or night at: 1-800-424-9300

## 2. HAZARDS IDENTIFICATION

**DANGER!!**

Hazard Statements:

May cause fire or explosion; strong oxidizer.  
Contains gas under pressure; may explode if heated.  
May be corrosive to metals.  
Causes severe skin burns and eye damage.  
Toxic if inhaled.  
May cause respiratory irritation.  
Very toxic to aquatic life.

PRECAUTIONARY STATEMENTS:

Take any precaution to avoid mixing with combustibles.  
Do not breathe dust/fume/gas/mist/vapors/spray.  
Wear protective gloves/protective clothing/eye protection/face protection.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present & easy to do -  
Continue rinsing.  
If exposed or you feel unwell: Call a POISON CENTER or doctor/physician.  
Store in a well-ventilated place.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

MATERIAL	CAS#	EINECS#	WT %
Chlorine	7782-50-5	-	99.5-100

TRACE COMPONENTS: Trace ingredients (if any) are present in < 1% concentration, (< 0.1% for potential carcinogens, reproductive toxins, respiratory tract mutagens, and sensitizers). None of the trace ingredients contribute significant additional hazards at the concentrations that may be present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalents, and Canadian Hazardous Materials Identification System Standard.

SEE SECTIONS 8, 11 & 12 FOR TOXICOLOGICAL INFORMATION

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. FIRST AID MEASURES

GENERAL ADVICE:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists, refer to Section 8 for specific personal protective equipment.

**EYE CONTACT:**

If this product enters the eyes, open eyes while under gently running water. Use sufficient force to open eyelids. "Roll" eyes to expose more surface. Minimum flushing is for 15 minutes. Seek immediate medical attention.

**SKIN CONTACT:**

If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. If skin becomes irritated and irritation persists, medical attention may be necessary. Wash contaminated clothing before reuse, discard contaminated shoes.

**INHALATION:**

After high vapor exposure, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If breathing is difficult, give oxygen. If breathing has stopped, trained personnel should immediately begin artificial respiration. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If the heart has stopped, trained personnel should immediately begin cardiopulmonary resuscitation (CPR). Seek immediate medical attention. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**SWALLOWING:**

If swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, give two glasses of water to drink. DO NOT INDUCE VOMITING. Never induce vomiting or give liquids to someone who is unconscious, having convulsions, or unable to swallow. Seek immediate medical attention.

**NOTES TO PHYSICIAN:**

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (such as: Gastric lavage after endotracheal intubation).

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and SDS to physician or health professional with victim.

## 5. FIRE FIGHTING MEASURES

**FIRE & EXPLOSION PREVENTIVE MEASURES**

Isolate from combustibles, most metals, extreme heat.

**EXTINGUISHING MEDIA**

In case of fire in surroundings, use appropriate extinguishing media.

**SPECIAL FIRE FIGHTING PROCEDURES**

Water spray may be ineffective on fire but can protect fire-fighters & cool closed containers. Use fog nozzles if water is used. Do not enter confined fire-space without full bunker gear. (Helmet with face shield, bunker coats, gloves & rubber boots). Use NIOSH approved positive-pressure self-contained breathing apparatus.

**UNUSUAL EXPLOSION AND FIRE PROCEDURES** Noncombustible.

Reacts with most metals producing hydrogen which is extremely flammable & may explode. Isolate from combustibles. Closed containers may explode if exposed to extreme heat

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE AND ENVIRONMENTAL PRECAUTIONS:**

Evacuate unprotected personnel upwind or crosswind for at least 100 feet (800 feet for large spills) out of danger area. If a chlorine container is leaking, try to position it so that gas rather than liquid leaks. Apply emergency kit device if possible. For other than minor leaks, immediately implement predetermined emergency plan. Do not apply

water directly to a leak. Chlorine reacts with water to form corrosive, acidic, solution (hydrochloric acid). Call supplier or CHEMTREC when help is needed.

Releases should be reported, if required, to appropriate agencies.

#### PERSONAL PROTECTIVE EQUIPMENT

The proper personal protective equipment for incidental releases (such as: 1 Liter of the product released in a well-ventilated area), use impermeable gloves (triple-gloves (rubber gloves and nitrile gloves, over latex gloves), goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard hat. Self-Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.

#### ENVIRONMENTAL PRECAUTIONS:

Stop spill at source. Construct temporary dikes of dirt, sand, or any appropriate readily available material to prevent spreading of the material. Close or cap valves and/or block or plug hole in leaking container and transfer to another container. Keep from entering storm sewers and ditches which lead to waterways, and if necessary, call the local fire or police department for immediate emergency assistance.

#### CONTAINMENT AND CLEAN-UP MEASURES:

Absorb spilled liquid with polypads or other suitable absorbent materials. If necessary, neutralize using suitable buffering material, (acid with soda ash or base with phosphoric acid), and test area with litmus paper to confirm neutralization. Clean up with non-combustible absorbent (such as: sand, soil, and so on). Shovel up and place all spill residue in suitable containers. Dispose of at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal (see Section 13 - Disposal Considerations).

### 7. HANDLING AND STORAGE

#### HANDLING

Use only with adequate ventilation. Avoid breathing of vapor or spray mist. Do not get in eyes, on skin or clothing. Wear OSHA Standard full face shield. Consult Safety Equipment Supplier. Wear goggles, face shield, gloves, apron & footwear impervious to material. Wash clothing before reuse. NEVER pour water into this substance.

#### STORAGE

**OXIDIZER!** Keep separated from strong bases, combustible & reducing substances, metals. Keep cool. Keep dry. Keep inside a well-ventilated room. Do not store above 49 C/120 F. Keep container tightly closed & upright when not in use to prevent leakage. Reacts with most metals producing hydrogen which is extremely flammable & may explode. Wear full face shield, gloves & full protective clothing when opening or handling. When empty, drain completely, replace bungs securely.

#### NONBULK: CONTAINERS:

Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Empty containers should be handled with care. Never store food, feed, or drinking water in containers which held this product.

#### BULK CONTAINERS:

All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks immediately to the proper personnel.

#### TANK CAR SHIPMENTS:

Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tanks (for unloading) must be verified to be correct for receiving this product and be properly prepared,

prior to starting the transfer operations. Hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

#### PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:

Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Collect all rinsates and dispose of according to applicable Federal, State, Provincial, or local procedures.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

MATERIAL	CAS#	EINECS#	TWA (OSHA)	TLV (ACGIH)
Chlorine gas	7782-50-5	-	0.5 ppm	0.5 ppm

MATERIAL	CAS#	EINECS#	CEILING	STEL(OSHA/ACGIH)	HAP
Chlorine gas	7782-50-5	-	1 ppm/3 mg/m3	1 ppm	Yes

Each component showing `Yes' under "HAP" is an EPA Hazardous Air Pollutant.

#### RESPIRATORY EXPOSURE CONTROLS

Seek professional advice prior to respirator selection and use. Maintain airborne contaminant concentrations below exposure limits given above. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, European Standard EN 149, or applicable State regulations. If adequate ventilation is not available or there is potential for airborne exposure above the exposure limits, a respirator may be worn up to the respirator exposure limitations, check with respirator equipment manufacturer's recommendations/limitations. For a higher level of protection, use positive pressure supplied air respiration protection or Self-Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown.

#### EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS

Positive pressure, full-face piece Self-Contained Breathing Apparatus; or positive pressure, full-face piece Self-Contained Breathing Apparatus with an auxiliary positive pressure Self-Contained Breathing Apparatus.

#### VENTILATION

LOCAL EXHAUST: Necessary

MECHANICAL (GENERAL): Necessary

SPECIAL: None

OTHER: None

Please refer to ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

#### EYE PROTECTION:

Splash goggles or safety glasses. Face-shields are recommended when the operation can generate splashes, sprays or mists.

#### HAND PROTECTION:

Wear appropriate impervious gloves for routine industrial use. Use impervious gloves for spill response, as stated in Section 6 of this SDS (Accidental Release Measures). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

#### BODY PROTECTION:

Use body protection appropriate for task. Cover-all, rubber aprons, or chemical protective clothing made from impervious materials are generally acceptable, depending on the task.

#### WORK & HYGIENIC PRACTICES:

Provide readily accessible eye wash stations & safety showers. Wash at end of each shift & before eating, smoking or using the toilet. Remove clothing that becomes contaminated. Destroy contaminated leather articles. Launder or discard contaminated clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

STATE:	Compressed Liquefied Gas	
APPEARANCE:	Gas: Green to Yellow Liquid: Amber	
ODOR:	Sharp, Pungent	
ODOR THRESHOLD:	Not Available	
pH (Neutrality):	0.0	
MELTING POINT/FREEZING POINT:	-101 C / -150 F	
BOILING RANGE (IBP,50%,Dry Point):	-34 C / -29 F	
FLASH POINT (TEST METHOD):	Not Applicable	
EVAPORATION RATE (n-BUTYL ACETATE=1):	Not Applicable	
FLAMMABILITY CLASSIFICATION:	Non-Combustible	
LOWER FLAMMABLE LIMIT IN AIR (% by vol):	Not Applicable	
Not Available		
VAPOR PRESSURE (mm of Hg)@25 C	5830 mm	
VAPOR DENSITY (air=1):	2.4	
GRAVITY @ 68/68 F / 20/20 C:		
SPECIFIC GRAVITY (Water=1):	1.4	
POUNDS/GALLON:	11.7	
WATER SOLUBILITY:	Complete	
PARTITION COEFFICIENT (n-Octane/Water):	Not Available	
AUTO IGNITION TEMPERATURE:	Not Applicable	
DECOMPOSITION TEMPERATURE:	Not Available	
VOCs (>0.044 Lbs/Sq In) :	0.0 Vol% /0.0 g/L / 0.000	Lbs/Gal
TOTAL VOC'S (TVOC)*:	0.0 Vol% /0.0 g/L / 0.000	Lbs/Gal
NONEXEMPT VOC'S (CVOC)*:	0.0 Vol% /0.0 g/L / 0.000	Lbs/Gal
HAZARDOUS AIR POLLUTANTS (HAPS):	100.0 Wt% / 1400.0 g/L /	11.7 Lbs/Gal
NONEXEMPT VOC PARTIAL PRESSURE (mm of Hg@ 20 C)	0.0	
* Using CARB (California Air Resources Board Rules).		

**10. STABILITY AND REACTIVITY****STABILITY**

Stable but Reacts with most metals producing hydrogen which is extremely flammable & may explode. OXIDIZER!  
Reacts with organics.

**CONDITIONS TO AVOID**

Isolate from oxidizers, alkalis, heat, & open flame.

**MATERIALS TO AVOID**

The substance is a strong acid, reacts violently with bases and is corrosive. Reacts violently with strong reducers, metals, and combustibles. Reacts violently with strong bases, causing fire & explosion hazard.

**HAZARDOUS DECOMPOSITION PRODUCTS**

Chlorine, Hydrogen Chloride, Phosgene from heating in the presence of water.

HAZARDOUS POLYMERIZATION Will not occur.

**11. TOXICOLOGICAL INFORMATION****EYE & SKIN CONTACT:****ACUTE HAZARDS**

Severe burns to skin, defatting, dermatitis, evaporation causes frost bite.

Severe burns to eyes, redness, tearing, blurred vision. Rapid evaporation causes frostbite. Gas can cause severe skin & eye burns. Wash thoroughly after handling.

**INHALATION:**

Severe respiratory tract irritation may occur. Chemical burns, pulmonary edema. Vapor harmful.

**SWALLOWING:**

Not a likely hazard. Harmful or fatal if swallowed.

The symptoms of chemical pneumonitis may not show up for a few days.

**SUBCHRONIC HAZARDS/CONDITIONS AGGRAVATED****CONDITIONS AGGRAVATED**

Persons with severe lung, skin, liver or kidney problems should avoid use.

**CHRONIC HAZARDS****CANCER, REPRODUCTIVE & OTHER CHRONIC HAZARDS:**

Causes damage to respiratory system by prolonged or repeated exposure.

This product has no carcinogens listed by IARC, NTP, NIOSH,

OSHA or ACGIH, as of this date, greater or equal to 0.1%.

**IRRITANCY OF PRODUCT:** This product is irritating to contaminated tissue.

**SENSITIZATION TO THE PRODUCT:** No component of this product is known to be a sensitizer.

**MUTAGENICITY:** This product is reported to produce mutagenic effects in humans.

**EMBRYOTOXICITY:** This product is not reported to produce embryotoxic effects in humans.

**TERATOGENICITY:** This product is not reported to produce teratogenic effects in humans.

**REPRODUCTIVE TOXICITY:** This product is not reported to cause reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (such as: within the eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

LC50 (1 hour):                    0.86 mg/L or 293 ppm (Rat)

0.2 - 0.4 ppm	Odor Detected
1 - 3 ppm	Mild mucous membrane irritation
5 - 15 ppm	Moderate upper respiratory irritation
30 ppm	Immediate chest pain, vomiting, dyspnea, and cough
40 - 60 ppm	Toxic pneumonitis, pulmonary edema
430 ppm	Lethal in 30 minutes
1000 ppm	Fatal in a few minutes

Action on respiratory tract is due to strong oxidizing effect

## 12. ECOLOGICAL INFORMATION

**ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.**

**EFFECT OF MATERIAL ON PLANTS AND ANIMALS:**

This product may be harmful or fatal to plant and animal life if released into the environment. Refer to Section 11 (Toxicological Information) for further data on the effects of this product's components on test animals.

**EFFECT OF MATERIAL ON AQUATIC LIFE:**

LC50 (Fathead minnow):        0.07 - 0.15 mg/L (96 hours)

LC50 (Bluegill):                0.44 mg/L (96 hours)

LC50 (Daphnia):                30 - 150 ug/L (48 hours)

**MOBILITY IN SOIL**

This material is a mobile gas.

**DEGRADABILITY**

Atmospheric Half-life: 10 minutes  
 Atmospheric Lifetime: 14 minutes  
 Fresh Water Half-life: 1.3 - 5 hours

**ACCUMULATION**

This product does not accumulate or biomagnify in the environment.

**13. DISPOSAL CONSIDERATION**

Processing, use or contamination may change the waste disposal requirements. Do not dispose of on land, in surface waters, or in storm drains. Waste should be recycled or disposed of in accordance with regulations. Large amounts should be collected for reuse or consigned to licensed hazardous waste haulers for disposal.

ALL DISPOSAL MUST BE IN ACCORDANCE WITH ALL FEDERAL, STATE, PROVINCIAL, AND LOCAL REGULATIONS. IF IN DOUBT, CONTACT PROPER AGENCIES. EPA CHARACTERISTIC: D002, D003

**14. TRANSPORT INFORMATION**

IF > 10 LB / 4.5 KG OF THIS PRODUCT IS IN 1 CONTAINER, IT EXCEEDS THE RQ OF CHLORINE. "RQ" MUST BE PUT BEFORE THE DOT SHIPPING NAME.

DOT/TDG SHIP NAME: UN1017, Chlorine, 2.3, 5.1, 8, Toxic-Inhalation Hazard Zone B DRUM LABEL: (OXIDIZER), (CORROSIVE)

IATA / ICAO: UN1017, Chlorine, 2.3, 5.1, 8, Toxic-Inhalation Hazard Zone B IMO / IMDG: UN1017, Chlorine, 2.3, 5.1, 8, Toxic-Inhalation Hazard Zone B EMERGENCY RESPONSE GUIDEBOOK NUMBER: 124

**15. REGULATORY INFORMATION**

EPA REGULATION:

SARA SECTION 311/312 HAZARDS: Acute Health

SARA TITLE	III INGREDIENTS	CAS#	EINECS#	WT%	(REG.SECTION)	RQ(LBS)
Chlorine	gas	7782-50-5	-	99.5-100	(302,311,312,313,RCRA)	10

All components of this product are on the TSCA list. SARA Title III Section 313 Supplier Notification

This product contains the indicated <\*> toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning & Community Right-To-Know Act of 1986 & of 40 CFR 372. This information must be included in all SDSs that are copied and distributed for this material.

Any release equal to or exceeding the RQ must be reported to the National Response Center (800-424-8802) and appropriate state and local regulatory agencies as described in 40 CFR 302.6 and 40 CFR 355.40 respectively. Failure to report may result in substantial civil and criminal penalties. State & local regulations may be more restrictive than federal regulations.

STATE REGULATIONS:

CALIFORNIA SAFE DRINKING WATER & TOXIC ENFORCEMENT ACT (PROPOSITION 65):

This product may contain contaminants known to the State of California to cause cancer or reproductive toxicity.

INTERNATIONAL REGULATIONS

The components of this product are listed on the chemical inventories of the following countries:

Australia (AICS), Canada (DSL or NDSL), China (IECSC), Europe (EINECS, ELINCS)G

Japan (METI/CSCL, MHLW/ISHL), South Korea (KECI), New Zealand (NZIoC),

Philippines (PICCS), Switzerland (SWISS), Taiwan (NECSI), USA (TSCA).

CANADA: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) A: Compressed Gas

C: Oxidizing Material

D1A: Material causing Immediate and Serious Toxic Effects (Very Toxic Material)

E: Corrosive Material.

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

**16. OTHER INFORMATION****HAZARD RATINGS:**

HEALTH (NFPA): 3, HEALTH (HMIS): 4, FLAMMABILITY: 0, PHYSICAL HAZARD: 0

(Personal Protection Rating to be supplied by user based on use conditions.)

This information is intended solely for the use of individuals trained in the NFPA & HMIS hazard rating systems.

**EMPLOYEE TRAINING**

See Section 2 for Risk & Safety Statements. Employees should be made aware of all hazards of this material (as stated in this SDS) before handling it.

**Notice**

Aqua Chemical Supply, Inc. expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this SDS 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 Aqua Chemical Supply, Inc. sales office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Aqua Chemical Supply, Inc. makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Aqua Chemical Supply, Inc.'s control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein.

This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.