Section 1. Identification

Product identifier

Product Identity Chlorine (CHE-4000S)

Other means of identification Not Applicable

Relevant identified uses of the substance or mixture and uses advised against

Pulp bleaching, water treatment, manufacture of plastics, organic and inorganic chlorides, refrigerants and pharmaceuticals.

Restrictions on use:
Not available.

Details of the supplier of the safety data sheet

Company Name

Chemtrade Logistics Inc. (Canada)
155 Gordon Baker Road Suite 300
Toronto, Ontario M2H 3N5
(416) 496-5856

Chemtrade Logistics Inc. (US)
90 East Halsey Road, Suite 200
Parsippany, NJ 07054
(800) 228- 8558

Emergency

24 hour Emergency Telephone No.

Chemtrade Emergency Contact: (866) 416-4404 (US and Canada)
CHEMTREC +1-800-424-9300
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

Customer Service:

For SDS Info: (416) 496-5856
www.chemtradelogistics.com

Section 2. Hazard(s) identification

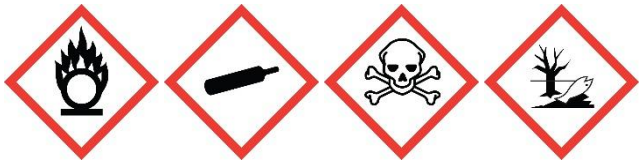
Exposure may aggravate pre-existing eye, skin, or respiratory conditions. Contact with gas escaping the container can cause frostbite.

Classification of the substance or mixture

Oxidizing gas;H270	May cause or intensify fire; oxidizer.
Liquified Gas;H280	Contains gas under pressure; may explode if heated.

Acute toxicity(inhalation), category 2:H330	Fatal if inhaled.
Skin corrosion/irritation category 2;H315	Causes skin irritation.
Serious eye damage / eye irritation, category 2;H319	Causes serious eye irritation.
Specific target organ toxicity, Single exposure category 3;H335	May cause respiratory irritation.
Aquatic toxicity (acute), category 1;H400	Very toxic to aquatic life.

Label elements



Danger

H270 May cause or intensify fire; oxidizer.
H280 Contains gas under pressure; may explode if heated.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.

[Prevention]:
P220 Keep away from clothing and other combustible materials.
P244 Keep reduction valves free from grease and oil.
P260 Do not breathe dust, fume, mist, vapors or spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves, eye protection, and face protection.
P284 In case of inadequate ventilation, wear respiratory protection.

[Response]:

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P304+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER, doctor or physician.

P312 Call a POISON CENTER, doctor or physician if you feel unwell.

P332+313 If skin irritation occurs: Get medical attention.

P337+313 If eye irritation persists: Get medical advice or attention.

P362+364 Take off contaminated clothing and wash it before reuse.

P370+376 In case of fire: Stop leak if safe to do so.

P391 Collect spillage.

[Storage]:

P403+233 Store in a well ventilated place. Keep container tightly closed.

P405 Store locked up.

P410+403 Protect from sunlight. Store in a well ventilated place.

[Disposal]:

P501 Dispose of contents or container in accordance with local and national regulations.

Other hazards

This product contains no PBT/vPvB/vPvM chemicals.

This product contains no endocrine disrupting chemicals.

Does NOT contain component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS) per the US EPA PFASMASTER combined list of PFAS chemicals.

Section 3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the Hazardous Products Regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Chlorine **CAS Number: 7782-50-5** **Synonyms: No available information**	**80 - 100**	**Serious eye damage / eye irritation, category 2;H319** **Specific target organ toxicity, Single exposure category 3;H335** **Skin corrosion/irritation category 2;H315** **Aquatic toxicity (acute), category 1;H400** **Oxidizing gas;H270** **Acute toxicity(inhalation), category 3;H331** **Gas under pressure;H280**	**Acute M-Factor: 100** **No data available**

The actual concentration or concentration range is withheld as a trade secret.
*PBT/vPvB - PBT, vPvM or vPvB-substance.
The full texts of the phrases are shown in Section 16.

Section 4. First aid measures

Description of first aid measures

General Take personal protective measures first, and after ensuring safety, move the patient out of the contaminated area to a place with fresh air. Never give anything by mouth to an unconscious person. If frostbite or freezing occurs, do not use hot water. Do not rub affected area.
Immediately call a POISON CENTER, doctor or physician.

Inhalation Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate respiratory protective equipment, use the buddy system), then remove the exposed person to fresh air. Keep at rest in a position comfortable for breathing. If breathing has stopped or is labored, trained personnel should give artificial respiration or assisted respirations. It is best to give oxygen under the guidance of trained personnel.
If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
Get immediate medical attention.

Eyes In case of frostbite, do not try to heat the affected area, cover eyes with gauze, and see a physician immediately.
If no frostbite, open the eyelids immediately, rinse the affected area with plenty of warm water for more than 30 minutes until the contamination is removed, then cover the eyes with gauze, and see a physician immediately.

Skin If necessary, wear protective gloves to avoid direct contact with this chemical.
Remove contaminated clothing.
In case of frostbite, do not try to heat the affected area, do not rinse or rub the affected area, and see a physician immediately.
If no frostbite, don't take off clothes, spray with plenty of warm water for at least 30 minutes. Apply a sterile dressing, and see a physician immediately.
Wash contaminated clothing before reuse.

Ingestion Ingestion is not considered a potential route of exposure. Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Overview Fatal if inhaled. May cause respiratory irritation. Causes eye and skin irritation.
Acute Health Effects: May cause frostbite on contact with the liquid. Fatal if inhaled. Causes eye and skin irritation.
INHALATION: Inhalation of this material can cause serious health effects in small amounts, leading to unconsciousness and death. Corrosive to the respiratory tract.

(IMMEDIATE) Effects such as pulmonary edema may be delayed.
SKIN CONTACT: Causes severe irritation which may progress to chemical burns. Contact with gas/liquid escaping the container can cause frostbite and freeze burns. (IMMEDIATE).
EYE CONTACT: Causes eye irritation which may progress to damage to the cornea, iris, or conjunctiva. Contact with gas/liquid escaping the container can cause frostbite, freeze burns, and permanent eye damage. (IMMEDIATE)
INGESTION: Not considered a potential route of exposure, but contact with gas/liquid escaping the container can cause freeze burns and frostbite. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. (IMMEDIATE)
If breathing has stopped, give artificial respiration immediately and consider giving oxygen. If exposed or concerned: Get medical attention/advice. See section 2 for further details.

Inhalation	Fatal if inhaled. May cause respiratory irritation.
Eyes	Causes serious eye irritation.
Skin	Causes skin irritation.
Chronic effects	May increase the likelihood of respiratory disorders. Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

Indication of Any Immediate Medical Attention and Special Treatment Needed Symptoms May be Delayed. If exposed or concerned, get medical advice and attention. If breathing has stopped, give artificial respiration immediately and consider giving oxygen. If exposed or concerned: Get medical attention/advice. If medical advice is needed, have product container or label at hand.

Section 5. Fire-fighting measures

Extinguishing media

Suitable Extinquishing Media: Use an extinguishing agent suitable for the surrounding fire. Dry chemical, foam, carbon dioxide.

Unsuitable extinquishing media: Direct water spray. Reacts with water. No water should be sprayed onto a leaking cylinder as spraying of water onto it promotes corrosion at the point of leakage as well as increasing the Evaporation rate of chlorine.

Special hazards arising from the substance or mixture

Hazardous decomposition: Reacts with hydrogen sulfide and water forming hydrochloric acid. Combines with carbon monoxide and sulfur dioxide forming phosgene and sulfuryl chloride.

Keep away from clothing and other combustible materials.

Keep reduction valves free from grease and oil.

Do not breathe dust, fume, mist, vapors or spray.

Advice for fire-fighters

Monitor carbon dioxide level. Evacuate personnel to safe areas. No entry until everything is completely cleared.

Fire Hazard: Contains an oxidizing material which may accelerate fire. The product itself does not burn, however, if the container is exposed to strong heat or flame, the gas cylinder will quickly discharge or explode violently.

Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. Container may explode in heat of fire.

Firefighting Instructions: Do not enter fire area without proper protective equipment, including respiratory protection. Exercise caution when fighting any chemical fire. Move containers from fire area if this can be done without risk. Evacuate area. In case of fire or explosion, do not breathe fumes. Cylinder can burst violently when heated due to excess pressure build up. Fight fire remotely due to the risk of explosion. **Hazardous reactions:** Combines with water to produce hydrochloric and hypochlorous acid. Chlorine reacts with carbon monoxide to produce toxic phosgene, and Sulphur dioxide to produce sulfonyl chloride.

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Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear full-body chemical protective clothing. Wear self contained breathing apparatus for fire fighting.

Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

Environmental precautions

Product is heavier than air. Prevent from entering sewers and basements, or any place where its accumulation can be dangerous.

Prevent further leakage or spillage.

Methods and material for containment and cleaning up

Ensure spill cleanup is done by trained personnel and wear appropriate personal protective equipment.

For Emergency Personnel 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 enhanced level "B" (Enhanced Level "B" is the addition of a splash hood). Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing. Responders can reference Chlorine Institute pamphlet 65.

If safe to do so, close the source of leakage or move to a safe area with good ventilation.

Section 7. Handling and storage

Precautions for safe handling

Follow safety procedures for containers of compressed gases and provide special training to workers handling chlorine. Comply with applicable regulations. It is recommended that Chlorine Institute pamphlets for safe handling and storage of chlorine be reviewed.

Store in well-ventilated area of low fire potential and away from incompatible materials. Regularly test and inspect piping and containment and ensure the complete gas system has been checked for leaks before use.

Moisture (more than 150 PPM of water) and chlorine can form hydrochloric and hypochlorous acids which are corrosive. Never place a leaking container in water or spray leaking container with water. Never tamper with fusible plugs or safety devices on containers: never manifold containers from liquid valves. This product is toxic to fish. Keep out of waterways and sewers.

The working area is separated from the storage area and should be well ventilated and far away from heat sources. Do not smoke or ignite sources of ignition. At the same time, avoid contacting with reactive metals (such as potassium, sodium, magnesium, zinc) to avoid violent reactions.

If used in an enclosed area, all safety procedures should be followed carefully.

Prevent physical damage to the cylinder: Do not drag, pull, roll, or kick the cylinder. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Before consulting the supplier, never try to increase the pressure of the container to accelerate the output of the liquid. Do not use fires or electric heating cylinder to increase the pressure in the container.

Keep cylinder valves clean and free from contamination (water or oil). Do not lift the cylinder from the valve. Avoid operating with oily hands. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Close container valve after each use and when empty, even if still connected to equipment. When opening, release the pressure slowly and carefully to avoid damaging to the valve seat. When in use, start the bottle valve cover, use a suitable pressure regulating valve, keep the valve fully open, and install a check valve to prevent gas from flowing into the container. After use, close the container valve and adjust the pressure regulating valve.

The empty cylinder should maintain a slight positive pressure. Empty barrels, containers and pipelines may still contain dangerous residues. Do not engage in any welding, cutting, drilling or other work before cleaning, so that the containers are subject to abnormal mechanical shocks. Cannot be used with incompatible materials.

If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Ensure the complete gas system has been checked for leaks before use.

Prepare emergency treatment equipment for fire and leakage at any time, and regularly check the container for obvious corrosion and spillage.

See section 2 for further details. - [Prevention]:

Conditions for safe storage, including any incompatibilities

Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from extremely high or low temperatures and incompatible materials. Store in original container or corrosive resistant and/or lined container. Protect from Sunlight. Keep reduction valves free from grease and oil. Empty containers retain product residue and can be hazardous. Do not reuse container. Use only chlorine-compatible lubricants. Use in a sealed system and/or a well-ventilated area. Observe good hygiene practices.

Incompatible materials: Avoid contact with reducing agents. Keep away from combustible materials, organic compounds, materials such as acetylene, turpentine & other hydrocarbons, ammonia, hydrogen, ether, metals, sulfur, & aluminum.

Keep away from combustible materials, clothing, organic material. Use only outdoors or in a well-ventilated area. Do not get in eyes, on skin, or on clothing. Do not breathe gas. Handle empty containers with care because they may still present a hazard.

Additional Hazards When Processed: May cause or intensify fire; oxidizer. Do not pressurize, cut, or weld containers. Ruptured cylinders may rocket. May release corrosive vapors.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

See section 2 for further details. - [Storage]:

Specific end use(s)

Pulp bleaching, water treatment, manufacture of plastics, organic and inorganic chlorides, refrigerants and pharmaceuticals.

Restrictions on use:

Not available.

Section 8. Exposure controls / personal protection

Control parameters

Exposure Limits

CAS No.	Ingredient	Source	Value
7782-50-5	Chlorine	ACGIH	0.1 ppm 0.4 ppm
		OSHA	C 1 ppm, 3 mg/m^3
		NIOSH	C 0.5 ppm (1.45 mg/m^3) [15-minute]
		Alberta	0.5 ppm TWA; 1.5 mg/m^3 TWA 1 ppm STEL; 2.9 mg/m^3 STEL

		British Columbia	0.5 ppm TWA 1 ppm STEL
		Manitoba	0.1 ppm TWA 0.4 ppm STEL
		New Brunswick	0.5 ppm TWA; 1.5 mg/m³ TWA 1 ppm STEL; 2.9 mg/m³ STEL
		Newfoundland and Labrador	0.1 ppm TWA 0.4 ppm STEL
		Nova Scotia	0.1 ppm TWA 0.4 ppm STEL
		Northwest Territories	0.5 ppm TWA 1 ppm STEL
		Nunavut	0.5 ppm TWA 1 ppm STEL
		Ontario	0.5 ppm TWA 1 ppm STEL
		Prince Edward Island	0.1 ppm TWA 0.4 ppm STEL
		Quebec	0.5 ppm TWAEV; 1.5 mg/m³ TWAEV 1 ppm STEV; 2.9 mg/m³ STEV
		Saskatchewan	0.5 ppm TWA 1 ppm STEL
		Yukon	1 ppm TWA; 3 mg/m³ TWA 3 ppm STEL; 9 mg/m³ STEL

Exposure controls

Respiratory

A NIOSH-approved self-contained breathing apparatus (SCBA) operated in a pressure demand or other positive pressure mode, or equivalent respirator should be used in situations of oxygen deficiency (concentration less than 19.5%), unknown exposure concentrations, conditions that are immediately dangerous to life or health (IDLH), or when exposure levels are above ACGIH or OSHA exposure limits. A respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2-1992 or MSHA 30 CFR 72.710 (where applicable) requirements must be followed whenever workplace conditions warrant respirator use.
EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS: Positive pressure, full-face piece SCBA; or positive pressure full-face piece SAR with an auxiliary positive pressure SCBA. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134). Advice should be sought from respiratory protection specialists. If contact with liquid or gas is possible, use of chemically protective gloves, coveralls and boots is required.
Recommended protective clothing materials are butyl rubber, neoprene, TeflonTM, ResponderTM, VitonTM.

Eyes

Chemical safety goggles and face shield. Where higher splash potential exists (e.g. loading, unloading, line breaking, sampling of product), wear SCBA. Eye wash fountains are required.

Skin

Wear chemical resistant gloves such as Neoprene Butyl Rubber gloves. Skin contact with liquified gas may cause frostbite, use suitable protection. Wear chemical protective clothing and gloves. Suitable materials include: Neoprene rubber, Butyl Rubber, Viton®, Viton®/butyl rubber, gloves. Skin contact with liquified gas may cause frostbite, use suitable protection. Where higher splash and exposure potential exists (e.g. loading, unloading, line breaking, sampling of chlorine), wear hard hat and SCBA (Self Contained Breathing Apparatus), chemical resistant jacket

	and pants or bib overalls. Chemical resistant gloves such as Butyl Rubber, Viton®, Viton®/butyl rubber gloves. Skin and eye contact with liquified gas may cause frostbite, use suitable protection. Follow all posted PPE requirements.
Engineering Controls	Appropriate Engineering Controls: Gas detectors should be used when hazardous gases/vapors may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Site-specific risk assessments should be conducted to determine the appropriate exposure control measures. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below the recommended exposure limits. Engineering methods to control hazardous conditions are preferred. Methods include mechanical ventilation, process or personnel enclosure, control of process conditions and process modifications. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits – consideration should be given to routing ventilation through a scrubber system to remove the chlorine. In case of insufficient ventilation, wear suitable respiratory equipment.
Other Work Practices	Put on appropriate personal protective equipment. Chemically compatible gloves (e.g.Neoprene Butyl Rubber), Chemical resistant clothing, and chemical resistant safety goggles and face shield. Protect skin and eyes from contact with liquified product, as it may cause frostbite. Where there is insufficient ventilation: wear respiratory protection. WHERE HIGHER SPASH POTENTIAL EXISTS (e.g. loading, unloading, line breaking, sampling of chlorine), wear hard hat and SCBA, chemical resistant jacket and pants or bib overalls. Chemical resistant gloves. Follow all posted PPE requirements. Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse. Use only outdoors or in a well-ventilated area. Do not breathe gas. Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details). Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours. Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details). Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details.

Section 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical State	Liquified Gas
Color	amber liquid or greenish-yellow gas
Odor	Chlorine
Odor threshold	No available information
Melting point / freezing point	-101 °C (-149.8 °F)
Initial boiling point and boiling range	-34 °C (-29.2 °F)
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: No available information Upper Explosive Limit: No available information
Flash Point	°F °C, Test method: (Open/Close cup)
Auto-ignition temperature	No available information
Decomposition temperature	No available information
pH	Reacts with water to product acidic solutions
Viscosity (cSt)	No available information
Solubility in Water	Water: 7.41 g/l
Partition coefficient n-octanol/water (Log Kow)	No available information
Vapour pressure (Pa)	638.4 kPa
Relative Density	No available information
Vapour Density	2.5 (air = 1)
Evaporation rate (Ether = 1)	No available information
Specific Gravity	2.5
Explosive Properties	Contains gas under pressure; may explode if heated

Other information

No other relevant information.

Section 10. Stability and reactivity

Reactivity

Oxidizer: increases the burning rate of combustible materials.

Chemical stability

Contains gas under pressure; may explode if heated.

Possibility of hazardous reactions

Hazardous Polymerization will not occur.

Conditions to avoid

Extremely high or low temperatures, incompatible materials, ignition sources, and combustible materials. Chlorine attacks plastic, rubber and coatings. Chlorine is corrosive to most metals in the presence of moisture (>150 ppm water) or at high temperature. Combines with water to produce hydrochloric and hypochlorous acid. Chlorine reacts with carbon monoxide to produce toxic phosgene, and Sulphur dioxide to produce sulfonyl chloride.

Incompatible materials

Avoid contact with reducing agents. Keep away from combustible materials, organic compounds, materials such as acetylene, turpentine & other hydrocarbons, ammonia, hydrogen, ether, metals, sulfur, & aluminum.

Hazardous decomposition products

Reacts with hydrogen sulfide and water forming hydrochloric acid. Combines with carbon monoxide and sulfur dioxide forming phosgene and sulfuryl chloride.

Section 11. Toxicological information

Acute toxicity

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Product Acute Toxicity Estimates	NA	NA	NA	NA	2,115

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Chlorine - (7782-50-5)	8,900.00, Rat - Category: NA	> 20,000.00, Rabbit - Category: NA	No data available.	No data available.	2,113.25, Mouse - Category: 3

Carcinogen Data

CAS No.	Ingredient	Source	Value
7782-50-5	Chlorine	IARC	No
		ACGIH	A4

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	2	Fatal if inhaled.
Skin corrosion/irritation	2	Causes skin irritation.
Serious eye damage/irritation	2	Causes serious eye irritation.

Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-single exposure	3	May cause respiratory irritation.
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

Possible routes of entry:
Inhalation, ingestion, skin contact, and skin absorption.

Symptoms and effects, both acute and delayed:
Fatal if inhaled. May cause respiratory irritation. Causes eye and skin irritation.

Acute Health Effects: May cause frostbite on contact with the liquid. Fatal if inhaled. Causes eye and skin irritation.

INHALATION: Inhalation of this material can cause serious health effects in small amounts, leading to unconsciousness and death. Corrosive to the respiratory tract. (IMMEDIATE) Effects such as pulmonary edema may be delayed.

SKIN CONTACT: Causes severe irritation which may progress to chemical burns. Contact with gas/liquid escaping the container can cause frostbite and freeze burns. (IMMEDIATE).

EYE CONTACT: Causes eye irritation which may progress to damage to the cornea, iris, or conjunctiva. Contact with gas/liquid escaping the container can cause frostbite, freeze burns, and permanent eye damage. (IMMEDIATE)

INGESTION: Not considered a potential route of exposure, but contact with gas/liquid escaping the container can cause freeze burns and frostbite. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. (IMMEDIATE)

If breathing has stopped, give artificial respiration immediately and consider giving oxygen. If exposed or concerned: Get medical attention/advice.

Eyes Causes serious eye irritation.

Skin Causes skin irritation.

Chronic effects May increase the likelihood of respiratory disorders. Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

Indication of Any Immediate Medical Attention and Special Treatment Needed Symptoms May be Delayed. If exposed or concerned, get medical advice and attention. If breathing has stopped, give artificial respiration immediately and consider giving oxygen. If exposed or concerned: Get medical attention/advice. If

medical advice is needed, have product container or label at hand.

Section 12. Ecological information

Toxicity

Very toxic to aquatic life.

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Chlorine - (7782-50-5)	0.06, Rainbow Trout	0.14, Daphnia magna	No data available.

Persistence and degradability

There is no data available on the preparation itself.

Bioaccumulative potential

No available information

Mobility in soil

No available information

Results of PBT and vPvB assessment

This product contains no PBT/vPvB/vPvM chemicals.

Other adverse effects

No available information

Section 13. Disposal considerations

Waste treatment methods

Observe all federal, provincial and local regulations when disposing of this substance.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

Other Information: Container may remain hazardous when empty. Continue to observe all precautions. Empty gas cylinders should be returned to the vendor for recycling or refilling. Do not puncture or incinerate container.

Section 14. Transport information

Classification Method: Classified as per Part 2, Sections 2.1-2.8 of the Transportation of Dangerous Goods Regulations.

DOT (Domestic Surface Transportation)	
UN number	UN1017
UN proper shipping name	UN1017, Chlorine, 2.3, (5.1, 8)
	
Transport hazard class(es)	2.3
Sub Class	5.1, 8
Packing group	Not Applicable

TDG (Domestic Surface Transportation)	
UN number	UN1017
UN proper shipping name	Chlorine
	
Transport hazard class(es)	2.3
Sub Class	5.1, 8
Packing group	Not Applicable

IMO / IMDG (Ocean Transportation)	
UN number	UN1017
UN proper shipping name	Chlorine
	
Transport hazard class(es)	2.3
Sub Class	5.1, 8
Packing group	Not Applicable

ICAO/IATA	
UN number	UN1017
UN proper shipping name	Chlorine
Transport hazard class(es)	2.3

Sub Class	5.1, 8
Packing group	Not Applicable

Environmental hazards

IMDG Marine Pollutant: Yes; (Chlorine)

Special precautions for user

No available information

Section 15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

NFPA Ranking

Health (blue) :3
Fire (red) :0
Reactivity (yellow) :1
Special (white) :OX

Toxic Substance Control Act (TSCA)

Chlorine

CERCLA Chemicals and RQs (lbs):

Chlorine (10.00)

EPCRA 302 Extremely Hazardous:

Chlorine

EPCRA 313 Toxic Chemicals:

Chlorine

Canadian Domestic Substance List (DSL):

Chlorine

Canadian Non-Domestic Substance List (NDSL):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Chlorine

Pennsylvania RTK Substances (>1%):

Chlorine

Proposition 65 - Carcinogens (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:

This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Chemical Name (CAS Number)	US TSCA	Australia AICS	Korea ECL	EU EINECS	EU ELINCS	EU SVHC	EN NLP	Mexico INSQ
Chlorine (7782-50-5)	Yes	Yes	Yes	Yes	No	No	No	Yes

Chemical Name (CAS Number)	China IECSC	Japan ENCS	Japan ISHL	Japan PDSCL	Japan PRTR 1	Japan PRTR 2	Philippines PICCS	New Zealand NZIOC
Chlorine (7782-50-5)	Yes	No	Yes	Yes	No	No	Yes	Yes

Section 16. Other information

Revision Date 10/31/2025
Revision Number 3

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H270 May cause or intensify fire; oxidizer.
H280 Contains gas under pressure; may explode if heated.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

H331 Toxic if inhaled.

H335 May cause respiratory irritation.

H400 Very toxic to aquatic life.

Disclaimer: The information presented herein is supplied as a guide to those who handle or use this product. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

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