Material Safety Data Sheet

Chlorine (Liquid or Gas) **24 Hour Emergency Phone: CHEMTREC 1-800-424-9300**

Date of Preparation: 11/26/01 Revision: 4/28/03

Section 1 - Chemical Product and Company Identification

CAS No: 7782-50-5
Molecular Weight: 70.91
Chemical Formula: Cl2
Distributed by:
Hawkins, Inc. 3100 E. Hennepin Avenue Minneapolis, MN 55413 (612-331-6910)

Section 2 - Composition / Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Chlorine	7782-50-5	99.5 - 100%	Yes

Section 3 - Hazards Identification

Emergency Overview

STRONG OXIDIZING AGENT. POISON. HAZARDOUS LIQUID AND GAS UNDER PRESSURE. MAY CAUSE CHEMICAL PNEUMONIA AND EVEN DEATH IN HIGH CONCENTRATIONS. MAY CAUSE SEVERE IRRITATION TO SKIN , EYES, AND RESPIRATORY TRACT. LIQUID MAY BURN EYES AND SKIN. CAN REACT EXPLOSIVELY WITH ORGANIC PRODUCTS.

Potential Health Effects

Inhalation:
Severe irritant. Coughing, burning, chest pain, vomiting, headache, anxiety and feeling of suffocation. Severe exposure may cause pneumonitis and pulmonary edema.

Ingestion:
Chlorine is a gas at room temperature. Ingested liquid chlorine can cause severe burns of the mouth, esophagus and stomach. Nausea and vomiting are likely to occur.

Skin Contact:
Corrosive! Contact with skin can cause irritation or severe burns and scarring with greater exposures.

Eye Contact:
Corrosive! Severe irritant. High concentrations or contact can cause burns.

Chronic Exposure:
Above established exposure limits may result in reduced breathing capacity.

Aggravation of Pre-existing Conditions:
Persons with pre-existing impaired respiratory function may be more susceptible to the effects of the substance.

Section 4 - First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:
If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Monitor closely for delayed onset of pulmonary edema and chemical pneumonia. Provide treatment as is medically indicated.

Section 5 - Fire-Fighting Measures

NFPA Ratings:
Health: 4 Flammability: 0 Reactivity: 0 Other: OX

Fire: Not considered to be a fire hazard, but does support combustion.

Explosion: Reacts explosively or forms explosive compounds, with many chemicals, such as acetylene, turpentine, ether, ammonia gas, hydrogen and finely divided metals.

Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire. Approach fire from upwind. If no chlorine escaping, apply water spray to keep fire-exposed containers cool. DO NOT APPLY WATER TO LEAKING CONTAINERS. Remove chlorine containers from fire zone if possible. Flame impingement on steel chlorine container will result in iron/chlorine fire causing rupture of the container.

Special Information:
Firefighters should wear self-contained, positive-pressure breathing apparatus, and a one piece, total-encapsulating suit of Butyl coated nylon or equivalent.

Section 6 - Accidental Release Measures

Evacuate unnecessary personnel. Keep unnecessary and unprotected people upwind from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Do not flush residues to the sewer. Residues from spills can be absorbed into an alkaline solution such as caustic soda. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

Section 7 - Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Protect from heat.. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not store with aluminum or magnesium. Do not mix with acids or organic materials.

Section 8 - Exposure Controls / Personal Protection

Airborne Exposure Limits:
Chlorine:
-OSHA Permissible Exposure Limit (PEL): 1 ppm Ceiling
-ACGIH Threshold Limit Value (TLV): 0.5 ppm (8 hr TWA), 1 ppm STEL

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9 - Physical and Chemical Properties

Appearance:
Greenish-yellow gas, amber liquid

Odor:
Pungent odor

Solubility:
Slight.

Density:
11.7 lbs/gal @15.6C

% Volatiles by weight: 100%.

Boiling Point:
-34C (-29.3F)

Melting Point:
-101C (-150F)

Vapor Density (Air=1):
2.5

Vapor Pressure (mm Hg):
71 psig @ 60F.

Section 10 - Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: No hazardous decomposition products.

Hazardous Polymerization: Will not occur.

Incompatibilities:
Dry chlorine is highly reactive with titanium and tin. Reacts with most metals at high temperatures. Reacts with water to produce hydrochloric acids, which are corrosive to most metals.

Ammonia, elemental metals, certain metal hydrides, carbides, nitrides, oxides, phosphides and sulfides, easily oxidized materials, organic materials (e.g. oil grease) and unstable and reactive compounds.

Conditions to Avoid: Heat, moisture, incompatibles.

Section 11- Toxicological Information

Chlorine: IDLH = 10 ppm

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Chlorine (7782-50-5)	No	No	None

Section 12 - Ecological Information

Environmental Fate:
Water: Chlorine is a strong oxidizer and will react rapidly with inorganic compounds. Chlorine will also oxidize organic compounds, but at a slower rate than inorganic compounds. The presence of light accelerates the dissipation of chlorine in water.

Environmental Toxicity:
Acute LC50 (96 hours) for Fathead Minnow: 0.07 - 0.15 ppm.
Acute LC50 (96 hours) for Bluegill: 0.44 mg/l

Section 13 - Disposal Considerations

Chlorine gas will disperse to the atmosphere leaving no residue. Chlorine may be neutralized by introducing it into caustic soda, soda ash, or hydrated lime. Liquid and/or solid residues from neutralization must be disposed of in a permitted waste management facility.

Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14 - Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: CHLORINE
Hazard Class: 2.3,8
UN/NA: UN1017 Packing Group:

RQ, Poison Inhalation Hazard, Zone B, Marine Pollutant.

Section 15 - Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Chlorine (7782-50-5)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Chlorine (7782-50-5)	Yes	Yes	No	Yes

-------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Chlorine (7782-50-5)	10	100	Yes	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Chlorine (7782-50-5)	10	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: Yes
Reactivity: No (Pure / Liquid)

Section 16 - Other Information

Prepared By: Chris W. Gibson
Revision Notes: Updated Section 14
Disclaimer:
Please be advised that it is your responsibility to inform your employees of the hazards of this substance, to advise them of what these properties mean and be sure they understand exposure information.

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