

**SAFETY DATA SHEET**

(This SDS follows the GHS format)

**CHLORINE****SDS NUMBER:** KCC – CL2 - 001**SDS DATE:** May 1, 2015**24 HOUR EMERGENCY PHONE NUMBER:** **(973) 589-0700**  
**Alt. (551) 200-2751**  
**CHEMTREC – (800) 424-9300****SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Name:** Chlorine**Chemical Name:** Chlorine**CAS Number:** 7782-50-5**Common Names:** Chlorine**Chemical Formula:** Cl<sub>2</sub>**Company:** Kuehne Chemical Company, Inc.  
86 North Hackensack Avenue  
South Kearny, New Jersey 07032-4673  
(973) 589-0700 Fax: (973) 589-4866**Manufacturer:** In addition to Kuehne Chemical Company manufactured product, Kuehne Chemical Company also utilizes various suppliers for this product. For specific information concerning the manufacturer of this product please call the company phone number listed above.

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## SECTION 2 – HAZARD(S) IDENTIFICATION

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### Category 1

Symbol(s):



Signal Word: Danger

**Hazard Statements:** May cause or intensify fire; oxidizer  
Liquefied gas  
Contains gas under pressure, may explode if heated  
May be corrosive to metals  
Fatal if inhaled  
Very toxic to aquatic life

#### HMIS HAZARD RATINGS

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

Based on Nat'l Paint & Coatings Association HMIS system

#### NFPA HAZARD RATINGS



Chemical not listed. Ratings based on NFPA guidelines

### Effects of Exposure

**Acute:** Inhalation – Coughing, burning, chest pain, vomiting, headache, anxiety and feeling of suffocation. Severe exposure may cause pneumonia and pulmonary edema.

Eyes – High concentrations or contact causes burns.

Skin – Contact may cause burns and tissue destruction. Contact with cold liquid or gas can produce freeze burns.

Ingestion – Is not a likely route of exposure.

**Chronic:** Exposure above the established exposure limits may cause reduced breathing capacity.

**Note:** Can react explosively with organic products.

**Appearance:** Amber color liquid, Greenish yellow gas

**Routes of Entry:** Inhalation, Eye Contact, Skin

**Target Organs:** Eyes, Skin, Respiratory Tract

**Reproductive Effects:** No information is available and no adverse reproductive effects are anticipated.

**Cancer Information:** The ingredient(s) of this product is (are) not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by NTP (National Toxicology Program).

**Synergistic Materials:** None known

**Mutagenicity:** There is no evidence of mutagenic potential.

**Medical Conditions Aggravated by Exposure:** Pre-existing respiratory disorders

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## SECTION 3 – COMPOSITION AND INFORMATION ON INGREDIENTS

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**CAS Number**

7782-50-5

**Name**

Chlorine

**Common Names**

Chlorine

**Percentage**

VOL: 99 - 100

WT: 99 - 100

**Exposure Limits**

PEL: 1 ppm ceiling

TLV: 0.5 ppm

STEL: 1.0 ppm

IDLH: 10 ppm

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## SECTION 4 – FIRST AID MEASURES

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**Inhalation:** Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, have a trained person administer artificial respiration. In case of excessive inhalation, maintain under observation for 48 hours due to risk of pulmonary edema. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

**Eyes:** Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

**Skin:** Look for inhalation effects first. Keep airway open if consciousness is impaired. Remove contaminated clothing under safety shower. Flush exposed skin with water for at least 15 minutes. Wash with soap and water. If irritation is present after washing, **SEEK MEDICAL ATTENTION IMMEDIATELY.**

**Ingestion:** NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If swallowed DO NOT INDUCE VOMITING. Give large quantities of water. (If available give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

### Note to Physician

Treatment is symptomatic. Because there is no known antidote for chlorine gas inhalation, effective and immediate relief of symptoms is the primary goal. Steroid therapy, if given early, has been reported effective in preventing pulmonary edema.

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## SECTION 5 – FIRE-FIGHTING MEASURES

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**Flash Point:** Not Applicable.  
**Auto-ignition Temperature:** Nonflammable.  
**Flammable Limits in Air - % by Volume - Upper:** Nonflammable.

### Extinguishing Media

Cool fire exposed containers with water spray. Use agents appropriate for surrounding fire.

**Fire Fighting Procedures**

Water spray should be used to cool containers. Keep water away from the leak source. If possible, remove containers from fire zone. Apply water to cool containers.

**Fire and Explosion Hazard**

Non-combustible in air but most combustible materials will burn in chlorine as they do in oxygen. Flammable gases and vapors will form explosive mixtures with chlorine. Reacts explosively or forms explosive compounds with many common chemicals especially acetylene, turpentine, ether, ammonia gas, fuel gas, hydrogen, hydrocarbons and finely divided metals. Containers will vent through fusible plugs at 71°C.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES****Steps to be Taken if Material is Released or Spilled**

Evacuate unnecessary personnel. Keep unprotected personnel upwind of the spill area. Contain liquids and prevent discharges to streams or sewers.

**Ventilation Requirements**

General room ventilation plus local exhaust ventilation required. Provide ventilation in low-lying areas.

**Methods for Cleaning Up**

Move leaking container to an isolated area. Position to release gas NOT LIQUID. Chlorine can be absorbed into an alkaline solution such as caustic soda, soda ash, hydrated lime.

**SECTION 7 – HANDLING AND STORAGE****Handling Precautions**

Follow safety procedures for containers of compressed gas. Provide special training to workers handling chlorine. Avoid breathing vapor or gas. Locate safety shower and eyewash station close to chemical handling area but not too close to limit usage. Secure containers at all times. Leaks should be fixed promptly. Do not allow contact with materials as noted in Section 10.

**Storage**

Store in well-ventilated area of low fire potential and away from incompatible materials (see section 10). Keep away from heat and source of ignition. Protect containers from weather and physical damage.

Liquid levels should be less than 85% of tank or cylinder capacity.

**Do Not Reuse Containers**

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## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

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### **Specific Personal Protective Equipment**

**Respiratory:** Use supplied air respirator in positive pressure mode for tank and confined space entry. Wear a NIOSH/MSHA-approved organic vapor acid-gas respirator, follow manufacturer's recommendations.

**Eye:** Wear chemical splash goggles plus a full face-shield to protect against splashing when appropriate.

**Gloves:** Wear chemical resistant gloves such as rubber, neoprene, or vinyl. Wear protective clothing to minimize skin contact. Wherever there is a possibility of splash or contact wear a chemical resistant full body suit and boots.

**Other:** Emergency shower and eyewash facility should be in close proximity.

**\*\*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.

Odor may indicate concentration above exposure limits.

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## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

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**Appearance:** Clear amber-colored liquid as shipped or greenish-yellow gas when vaporized.

**Odor:** Pungent irritating odor

**pH:** (Acidic)

**Vapor Density:** 2.5  
(Air = 1)

**Boiling Point:** -29°F (34°C)

**Freezing/Melting Point:** -150°F (-101°C)

**Solubility in Water:** Slight  
**Solubility (Other):** Soluble in alkaline solutions.

**Specific Gravity:** 1.5  
(H<sub>2</sub>O = 1)



<b>Odor Threshold (ppm):</b>	0.06
<b>Evaporation Rate:</b>	Not available
<b>Chemical Family:</b>	Halogen
<b>% Volatile by Volume:</b>	100%
<b>Molecular Weight:</b>	71

## SECTION 10 – STABILITY AND REACTIVITY

### Conditions Contributing to Instability

High temperatures, chlorine reacts with most metals at increased temperatures. Ignites carbon steel at 251°C.

### Incompatibility

Stable at room temperature, contact with combustibles (gasoline, petroleum products, turpentine, alcohols, acetylene, hydrogen, ammonia and sulfur) and finely-divided metals may cause fires and explosions. Wet chlorine is corrosive to most metals except titanium.

**Reacts With:** Titanium, Carbon Steel, Hydrogen and Air, Oil, Greases, Lubricants, and Other Hydrocarbons

**Hazardous Decomposition Products:** None known

**Hazardous Polymerization:** Hazardous Polymerization will not occur.

## SECTION 11 – TOXICOLOGICAL INFORMATION

<u>CAS Number</u>	<u>Name</u>	<u>Common Names</u>
7782-50-5	Chlorine	Chlorine
<b>Acute Inhalation LC<sub>50</sub>:</b>	(human)	840 ppm/30 minutes
	(rat)	293 ppm/60 minutes
	(mouse)	137 ppm/60 minutes

**Teratogenicity and Fetotoxicity:** No information is available and no adverse teratogenic/embryotoxic effects are anticipated.

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## SECTION 12 – ECOLOGICAL INFORMATION

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**Ecotoxicological Information:** Highly toxic to aquatic life. Fish toxicity: critical concentration = 0.03 mg/L; aesthetic c.c. = 0.5 mg/L; 72H LC<sub>50</sub> = 0.5 mg/L (Daphnia magna plant c.c. = 100 mg/L).

**Environmental Effects:** Dangerous if allowed to enter drinking water supply in high concentrations. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

**Persistence and Degradation:** The substance is highly reactive and will not persist in the environment.

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## SECTION 13 – DISPOSAL CONSIDERATIONS

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### Product Disposal

Dispose of in accordance with all local, state, and federal regulations. Depending on the particular situation involved, special equipment may be required; Consult with your chlorine supplier.

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## SECTION 14 – TRANSPORT INFORMATION

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<b>DOT Proper Shipping Name:</b>	Chlorine
<b>DOT Hazard Class:</b>	2.3
<b>DOT ID Number:</b>	UN1017
<b>DOT Hazardous Substance:</b>	RQ 10 Lb. (Chlorine)
<b>DOT Marine Pollutant:</b>	Marine Pollutant
<b>Additional Description:</b>	Poison, Inhalation Hazard, Zone B



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## SECTION 15 – REGULATORY INFORMATION

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### **U.S. Federal Regulations**

**OSHA:** Physical classification – Compressed gas, Oxidizer, Corrosive  
Health classification – Corrosive, Highly Toxic

**TSCA (Toxic Substances Control Act):** Regulations, 40 CFR 710, all ingredients are on the TSCA Section 8 (b) Inventory.

**CERCLA and SARA/Title III:** Regulations (40 CFR 370 and 372) Section 313 Supplier Notification.

**This product contains the following toxic chemical(s) subject to reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372:** 99.9% Chlorine (7782-50-5)

**Emergency Planning and Notification (40 CFR 355):** This product contains chemical(s) which are on the Extremely Hazardous Chemicals list:

Molecular chlorine (7782-50-5) TPQ=100  
Trichloromethane (67-66-3) TPQ=10000

This product is registered with the USEPA as a pesticide as required under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

### **Other Standards**

**Legislation which apply to this product:** Massachusetts Extraordinarily Hazardous Substance List Massachusetts Right to Know, Pennsylvania Right to Know, New Jersey Right-to-Know

**NSF Certification:** This product has been classified as an approved drinking water treatment chemical under ANSI/NSF Standard 60 by Underwriters Laboratories (reference number: MH17612).

**American Water Works Association:** This product meets the specifications of AWWA-B301-99.

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## SECTION 16 – OTHER INFORMATION

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**Product Use:** Bactericide in water purification, used in the manufacture of many inorganic and organic chlorinated compounds and pulp bleaching.

**Prepared By:** Kuehne Company's Environmental, Safety & Security Department  
Revision E – 1 May 2015

For additional non-emergency health, safety or environmental information, telephone:  
(973) 589 - 0700 or write to:

Kuehne Chemical Company, Inc.  
86 N. Hackensack Avenue  
South Kearny, New Jersey 07032-4673

**SDS Legend:**

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service Registry Number
CEILING	Ceiling Limit (15 Minutes)
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit (OSHA)
STEL	Short Term Exposure Limit (15 Minutes)
TLV	Threshold Limit Value (ACGIH)
TWA	Time Weighted Average (8 Hours)

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No warranty of any kind is given or implied and Kuehne Chemical Company, Inc. will not be liable for any damages, losses, injuries or consequential damages that may result from the use of or reliance on any information contained herein.

This Safety Data Sheet (SDS) covers the following materials:

Chlorine – Liquefied gas: Under pressure

**REFERENCES:**

- American National Standard, Z400.1-1993
- The Chlorine Manual Sixth Edition
- Chlorine Institute Pamphlet 1 Chlorine Basics Edition 8 May 2014
- Pamphlet 164 Reactivity and Compatibility of Chlorine and Sodium Hydroxide with Various Materials Edition 2 Revision 2 August 2007
- National Institute for Occupational Safety and Health, US Dept. of Health & Human Services, Cincinnati, 1994.
- Supplier's Safety Data Sheets
- Windholz, Martha, Ed, The Merck Index, 11<sup>th</sup> ed., Merck and Co, Inc., Rahway, New Jersey, 1989.

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## WARNING LABEL INFORMATION

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**Active Ingredient:** Chlorine (Cl<sub>2</sub>).....99.5 % (by weight)  
Other Ingredients.....00.5 %  
Total.....100.0 %

**KEEP OUT OF REACH OF CHILDREN**

**DANGER POISON**

**Category 1**

**Symbol(s):**



**Signal Word:** Danger

**Hazard Statements:** May cause or intensify fire; oxidizer  
Liquefied gas  
Contains gas under pressure, may explode if heated  
May be corrosive to metals  
Fatal if inhaled  
Very toxic to aquatic life

### FIRST AID

**IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

**IF SWALLOWED:** 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 a poison control center or doctor. Do not give anything by mouth to an unconscious person.

**NOTE TO PHYSICIAN:** Probable mucosal damage may contraindicate the use of gastric lavage. Treatment is symptomatic. Because there is no known antidote for chlorine gas inhalation, effective and immediate relief of symptoms is the primary goal. Steroid therapy, if given early, has been reported effective in preventing pulmonary edema.

**HOT LINE NUMBER:** 1-800-POISON-1            Class I Pesticide

Have product container or label with you when calling a poison control center or doctor, or going for treatment.

### **PRECAUTIONARY STATEMENTS HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS**

**DANGER:** Fatal if inhaled or absorbed through the skin. Corrosive causes irreversible eye damage and skin burns. Do not breathe vapors or get in eyes, on skin or on clothing. Wear goggles, protective clothing, and rubber gloves as discussed below. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**Personal Protective Equipment (PPE):** Applicators and other handlers must wear long-sleeved shirts, long pants, shoes and socks.

**Environmental Hazards:** This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your local State Water Board or Regional Office of the EPA.

**Physical and Chemical Hazards:** Chlorine is a non-flammable gas, liquefied, under pressure. Do not drop container. Do not heat container. Keep away from intense heat or open sunlight. Corrosive to most metals in the presence of moisture.



## **DIRECTION FOR USE**

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

For use as a disinfectant and/or algacide by experienced personnel only, in municipal water supplies, sewage, sewage and waste management plants, and in commercial and industrial cooling systems and in paper mills; and in repackaging into portable cylinders. Packagers must obtain their own registration with the Environmental Protection Agency.

Only specifically designed dispensing equipment should be used in accordance with manufacturer's instructions and according to state regulatory agency recommendations for dosage or residual chlorine levels which should be maintained for each specific site of application.

Have available a gas mask approved for chlorine service by the U.S. Bureau of Mines or the National Institute of Occupational Safety and Health. Handle and use only in accordance with practices recommended in the CHLORINE MANUAL published by the Chlorine Institute, Inc. Washington D.C. Use only in well ventilated areas.

### **STORAGE AND DISPOSAL**

**STORAGE:** Cylinders and ton containers should be stored in a dry area away from sources of heat and protected from direct sunlight and precipitation. They should be segregated from other compressed gases and never stored near hydrocarbons, finely divided metals, turpentine, ether, anhydrous ammonia, and other flammable materials.

Exercise due caution to prevent damage to or leakage from the containers.

**DISPOSAL OF CONTAINERS:** Refillable container. Refill this container with Chlorine Gas only. Do not reuse this container for any other purpose. All chlorine containers are returnable and should be returned as promptly as possible when empty. It is illegal to fill a container without the permission of the owner. All valves must be closed tight and closures or caps secured. It is illegal to ship a leaking container.

## **IN CASE OF**

**FIRE:** Material does not burn. Use extinguishing medium as appropriate for surrounding fire.

**SPILL OR LEAKAGE:** Handlers must wear chemical-resistant, waterproof, insulated gloves (such as nitrile or butyl), rubber boots and full-face respirators approved for chlorine (MSHA/NIOSH approval number prefix TC-14G) or self-contained breathing apparatus (SCBA) (MSHA/NIOSH approval number prefix TC-13F). Since there is always the possibility of a spill or a leak, gloves and a respirator of a type specified above must be available and are required for anyone entering into an affected area in the event of a leak or spill.

**LEAK PROCEDURES:** Make daily inspection for leaks. Stop a leak at once, since it will become worse with time.

In case of a leak, evacuate everyone from the immediate area. For entry into the affected area to correct problem, wear personal protective equipment (including prescribed respirators) specified in the Hazards to Humans section of this labeling. When possible, move leaking or damaged cylinders outdoors or to an isolated location. Observe strict safety precautions. Work upwind, if possible. Allow any liquid chlorine to evaporate. Only correctly trained and Personal Protective Equipment (PPE)-equipped handlers are to perform such cleanup. Do not permit entry into the leak area by any other person until the chlorine has completely dispersed.

Get protective equipment. Contain spill and pump into marked container for reclamation for disposal. Avoid discharges to sewers and streams. Spills of 10 pounds or more must be reported to the National Response Center at the following number:

**1-800-424-8802**

State and local regulations may have additional reporting requirements, check with the proper state and local authorities. Wear neoprene or rubber gloves.

**IN CASE OF CHEMICAL EMERGENCIES CALL:  
24 HOUR EMERGENCY PHONE (973) 589-0700  
Alt. (551) 200-2751**