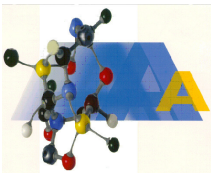

Alexander
Chemical
Corporation

**MATERIAL SAFETY DATA SHEET**
**CHLORINE**
Effective 7/15/10


## SECTION 1 - EMERGENCY TELEPHONE

Alexander Chemical Corporation (business hours): 800/348-8827

Alexander Chemical Corporation (after business hours): 800/445-9458

CHEMTREC: 800/424-9300

## SECTION 2 - DISTRIBUTOR INFORMATION

Alexander Chemical Corporation
Kingsbury Industrial Park
Kingsbury, Indiana 46345
800/348-8827

Alexander Chemical Corporation
6300 Trillium Trail
Mason, Michigan 48854
517/676 8884

## SECTION 3 - PRODUCT IDENTITY

Product name: Chlorine. Chemical name: Chlorine. Chemical formula: $Cl_2$.

CAS number: 007782-50-5.

Hazardous ingredients: Chlorine, greater than 99.5% by weight.

OSHA 29 CFR 1910.1200 evaluation: Hazardous.

## SECTION 4 - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance and odor: Amber colored liquid; vaporizes to greenish yellow gas with pungent odor.

Boiling point: - 29.39 $^0$F. Freezing point: -150 $^0$F.

Specific gravity: Gas = 2.49 at 32 $^0$F; Liquid = 1.47 at 32/39.2 $^0$F.

pH: Acidic. Solubility in water: 0.73% at 68 $^0$F.

Vapor pressure: 4,996 mm Hg at 68 $^0$F.

Vapor density: 2.67 pounds per cubic foot at 68 $^0$F.

Molecular weight: 70.9. Percent volatile by volume: 100.

## SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

Flash point: None.

Flammable limits in air: Lower: None. Upper: None.

Autoignition temperature: Not applicable.

Fire fighting procedures / fire extinguishing media: Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind and out of low area; ventilate closed area before entering. Prevent human exposure to fire, smoke, fumes, or products of combustion. Self-contained positive pressure breathing equipment, fully enclosed protective clothing and structural fire fighter's protective clothing should be used by fire fighters. Move containers from the fire zone, if they can be moved without risk. For small fires, use dry chemical, carbon dioxide, or halon fire extinguishers. Use alcohol foam for large fires. If no chlorine is escaping, use water spray to cool containers. For massive fires, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from the area and let it burn.

Unusual fire and explosion hazards: Strong oxidizer. Chlorine itself is non-combustible, but most combustibles will burn in chlorine as in oxygen, forming irritating and toxic gases. Chlorine may ignite other combustible materials. Chlorine reacts explosively, or forms explosive compounds, with many chemicals such as acetylene, turpentine, ether, ammonia, hydrogen and finely divided metals.

## SECTION 6 - REACTIVITY DATA

Stability: Stable under normal conditions. Hazardous polymerization: Will not occur.

Incompatibility (conditions and materials to avoid): Alkalis, reducing agents, combustible substances, finely divided metals, and organic material. Moist chlorine is highly corrosive to most metals. Chlorine reacts with most metals at high temperatures. Chlorine reacts with hydrogen sulfide and water to form hydrochloric acid; with carbon monoxide and sulfur dioxide to form phosgene and sulfuryl chloride. Chlorine is a strong oxidizer.

Hazardous decomposition products: Chlorine forms corrosive solution in water: hypochlorous acid and hydrochloric acid.

## SECTION 7 - HEALTH HAZARD DATA

Primary routes of entry: Inhalation, direct contact and eye contact.

Acute health effects: Chlorine is a potent irritant to the mucous membranes of the eyes, nose ant throat, and to the linings of the entire respiratory tract. The extent of injury depends upon concentration and duration of exposure. Death may occur under severe exposure. In high concentrations, chlorine may cause skin irritation, with sensations of burning and prickling, inflammation and blister formation. Liquid chlorine may cause serious direct and eye burns on contact.

Chronic health effects: Chronic exposure to chlorine gas can cause corrosion of the teeth, diseases of the lung, and may predispose the individual to lung infections, including tuberculosis.

Potential adverse chemical interactions: Persons with pre-existing lung or skin diseases may be at increased risk to the toxic effects of chlorine on these organs. Smoking activity exacerbates the pulmonary toxicity of chlorine gas.

Inhalation: May cause severe irritation to the respiratory tract followed by coughing, burning, chest pain, vomiting, headache, anxiety and feeling of suffocation. Severe exposure may cause pneumonitis and pulmonary edema. Repeated exposure to chlorine may result in reduced pulmonary capacity and dental erosion.

Direct contact: Contact with liquid chlorine may cause burns, blistering and tissue destruction.

Eye contact: Liquid and or high concentrations of chlorine gas in contact with the eyes will cause extreme irritation and or burns.

Ingestion: Ingestion is unlikely.

Carcinogens (NTP, IARC OR OSHA): No.

## SECTION 8 - FIRST AID

Inhalation: Remove victim to fresh air. If not breathing, perform artificial respiration. Administer oxygen until victim breathes easily. Keep warm and at rest. Get medical attention.

Direct contact: Flush immediately with soap and water for at least fifteen (15) minutes, while removing contaminated clothing. Get medical attention, if irritation persist. Never attempt chemical neutralization. Wash clothing before re-use. Destroy contaminated shoes.

Direct eye contact: Flush immediately with water for at least fifteen (15) minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye/lid tissue. Get immediate medical attention.

Ingestion: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water or milk. If vomiting occurs spontaneously, keep airway clear and give more water or milk. Get medical attention.

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.

## SECTION 9 - STORAGE, HANDLING AND USE

Precautions to be taken in handling and storage: Store chlorine containers in well ventilated area of low fire potential and away from incompatible materials. Keep away from heat and sources of ignition. Protect container from weather and physical damage. Regularly test and inspect piping and containment used for chlorine service. All chlorine process equipment should be kept dry.

Steps to be taken in case material is released or spilled: If material is spilled or released to the atmosphere, keep upwind, provide ventilation, wear full protective equipment and shut off supply at source. Exclude non-essential personnel. Contain liquids and prevent discharges to streams or sewer systems; and control or stop the loss of volatile materials to the atmosphere. Large leaks may require environmental consideration and possible evacuation. Do not apply water to leak. Position container to release gas, not liquid. Chlorine can be neutralized by absorbing into an alkaline material such as caustic soda, soda ash, lime, etc. Control large spills by diking and cover the spill with foam to reduce air contamination.

Waste disposal methods: Dispose of spilled material in accordance with all local, state and federal regulations.

## SECTION 10 - EXPOSURE CONTROL INFORMATION

Exposure guidelines: ACGIH TLV TWA: 0.5 part per million. OSHA PEL: 1.0 part per million ceiling.

ACGIH STEL: 1.0 part per million. ACGIH IDLH: 10.0 parts per million.

Ventilation: Provide general and local exhaust ventilation to maintain exposure levels below recommended limits.

Respiratory protection: Use NIOSH approved respirators in accordance with 29 CFR 1910.132 and 1910.134.

Skin protection: Wear impervious gloves. Boots, aprons, and chemical suits should be worn when necessary to prevent contact.

Eye protection: Carefully fitted gas-tight chemical goggles, with approved impact resistant lenses. Eyewash fountains recommended in all storage and handling areas. Do not wear contact lenses.

## SECTION 11 - REGULATORY INFORMATION

S.A.R.A. Title III:

Section 302 and 304: Extremely hazardous substance.

Threshold planning quantity: 100 pounds.

Section 311 and 312 hazard categories: Acute, chronic, reactive and sudden release of pressure.

Section 313 toxic chemical: Chlorine.

C.E.R.C.L.A. reportable quantity: 10 pounds.

T.S.C.A.: Chlorine is listed.

D.O.T.:

Proper shipping name: Chlorine.

Hazard class: Primary: 2.3 Secondary: 5.1, 8

Identification number: UN 1017.

Packing group: Not applicable.

Special provision: Poison - inhalation hazard, zone B.

Other information:

Toxicity data:

Rat $LC_{50}$ : 293 parts per million [one (1) hour].

Mouse $LC_{50}$ : 137 parts per million [one (1) hour].

Fish (bluegill) $LC_{50}$: 0.4 part per million [ninety-six (96) hours].

Human $LC_{50}$ : 874 parts per million [thirty (30) minutes].

N.F.P.A. ratings: Health = 4, Flammability = 0, Reactivity = 0, Special = Oxidizer.