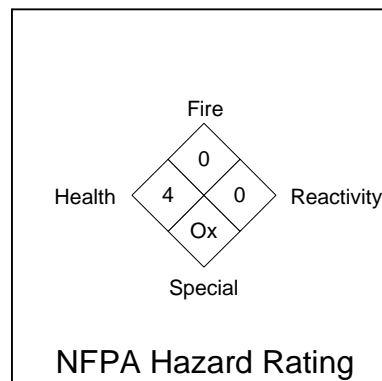


Material Safety Data Sheet: Chlorine**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product name****Chlorine****Effective date**

November 24, 2008

Chemical formulaCl₂**CAS name & no.**

Chlorine, 7782-50-5

Manufacturer's name and addressGeorgia Gulf Chemicals and Vinyls, LLC
P.O. Box 629
Plaquemine, LA 70765-0629**Emergency telephone number**For transportation emergencies:
CHEMTREC (800) 424-9300
For all other emergencies: (225) 685-2500**MSDS contact**Corporate Health & Safety Department
P.O. Box 629
Plaquemine, LA 70765-0629
Phone Number (225) 685-2500

Material Safety Data Sheet: Chlorine**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component	CAS No.	Wt. %.
Chlorine	7782-50-5	>99

3. HAZARDS IDENTIFICATION**PRECAUTIONARY INFORMATION**

Corrosive. Strong oxidizer. Eye and skin burns on contact. Inhalation hazard. Inhalation may be fatal. Severe eye and respiratory tract irritant at low levels. Can react explosively with organic products.

POTENTIAL HEALTH EFFECTS**Primary Routes Of Exposure**

Inhalation, skin, and eye contact.

Acute Effects

Chlorine is a potent irritant to the mucous membranes of the eyes, nose and throat, and to the linings of the entire respiratory tract. The extent of injury depends upon concentration and duration of exposure. Estimated clinical effects are as follows:

Exposure (in ppm)	Effects
0.2-3	Mild mucous membrane irritation
5-15	Moderate irritation of the upper respiratory tract
7-8	Eye irritation
30	Immediate chest pain, vomiting, difficult or labored breathing, and cough
40-60	Toxic pneumonia and pulmonary edema

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 eye and skin burns on contact. Frostbite may also occur.

HAZARD CLASSIFICATION**Chronic 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.

Material Safety Data Sheet: Chlorine**3. HAZARDS IDENTIFICATION CONTINUED****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. A significant decrease in airflow rates have been noted in smokers exposed to chlorine as compared with non-smokers exposed to chlorine.

Carcinogen Status

Chlorine is not considered carcinogenic by OSHA, NIOSH, NTP, IARC, or EPA.

4. FIRST AID MEASURES**Inhalation**

Remove victim to fresh air without delay. Make sure that rescuers wear self-contained breathing apparatus and have protective clothing. If minimal exposure with minor sensations of burning of nose, throat, eyes, and respiratory tract (with perhaps slight cough), no specific treatment required beyond removal from chlorine atmosphere. In most instances these victims will be symptom free within an hour or less. However, because of possible delayed pulmonary effect, they should receive medical attention and be observed for several days.

Those individuals experiencing more severe symptoms (i.e., tightness in chest, dyspnea, persistent cough, anxiety) must be treated with oxygen and other supportive measures. Move victim to fresh air and get medical attention. Monitor for respiratory distress. Emergency airway support and 100% humidified supplemental oxygen with artificial respiration may be needed. If clothing is contaminated with chlorine, remove and wash skin with plenty of water. Transfer to hospital or emergency medical facility.

Skin Contact

Wash skin using water. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water. If irritation persists after irrigation or if skin is broken or blistered, get medical attention promptly.

Eye Contact

Wash eyes with large amounts of room temperature water for at least 15 minutes occasionally lifting the lower and upper lids. Get medical attention immediately. Victim should be examined by an ophthalmologist. -

Ingestion Not applicable.

Material Safety Data Sheet: Chlorine**5. FIRE FIGHTING MEASURES**

Flash Point Not Applicable

Flammable Limits (% By Vol.)

Lower Explosive Limit (LEL) Not Applicable
Upper Explosive Limit (UEL) Not Applicable

Autoignition Temperature Not Applicable

Fire Fighting Procedures/Fire Extinguishing Media

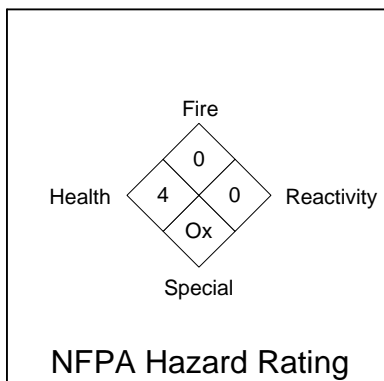
Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind and out of low areas; ventilate closed areas before entering. Prevent human exposure to fire, smoke, fumes, or products of combustion. Self-contained positive pressure breathing equipment, fully enclosed protective clothing, and structural firefighter's protective clothing should be used by firefighters. Move containers from the fire zone, if they can be moved without risk. Tank cars or barges should be disconnected and pulled out of the danger area. This should be attempted only by properly trained personnel using prescribed protective equipment. For small fires use dry chemical or carbon dioxide fire extinguishers. Use alcohol foam for large fires. Use water sprays to cool containers exposed to flames, until well after the fire is out. Stay away from ends of tanks. Containers may explode in heat of fire. For massive fires in cargo areas, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire 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 (wood, paper, oil, etc.). Chlorine reacts explosively, or forms explosive compounds, with many chemicals such as acetylene, turpentine, ether, ammonia, hydrogen and finely divided metals.

National Fire Protection Association Hazard Rating

4=Extreme
3=High
2=Moderate
1=Slight
0=Insignificant
OX=Oxidizer



Material Safety Data Sheet: Chlorine**6. ACCIDENTAL RELEASE MEASURES****Protect People:**

Restrict access to release area; move unprotected personnel upwind of the area. Evacuate the area for at least 150 feet in all directions for small releases and evacuate for at least 300 feet initially for large releases. For large releases, evacuate for at least 0.8 mile width and 1.5 mile length downwind of release. Allow only trained personnel wearing NIOSH-approved, self-contained breathing apparatus or full facepiece airline respirators with auxiliary SCBA's operated in the pressure/demand mode should be allowed in the vicinity of a release. Only trained personnel should try to stop leak, if they can do so without risk. Never apply water to a chlorine leak. Application of water makes chlorine much more corrosive. Keep combustibles (wood, paper, oil, etc.) away from the release area. Chlorine represents an explosion hazard if it comes into contact with incompatible materials.

Protect the Environment:

Prevent from entering into soil, ditches, sewers, waterways, and/or groundwater. Spills or release to natural waterways is likely to kill aquatic organisms.

Clean Up:

Dispose release material in accordance with federal, state, and local regulations. Chlorine releases over the reportable quantity (10 lbs) should be reported to the National Response Center (800-424-8802).

7. HANDLING AND STORAGE

Wear appropriate protective equipment when handling chlorine. All chlorine process equipment including pipes, valves, and containers should be kept dry. Follow all federal, state, and local regulations as well as insurance codes when storing and handling chlorine. Storage facilities should be properly designed and should be operated and periodically inspected in accordance with Chlorine Institute recommendations found in Chlorine Institute pamphlets #5 and #78. Chlorine containers should be segregated from other compressed gases and should never be stored near acetylene, hydrogen, hydrocarbons, finely divided metals, turpentine, ether, anhydrous ammonia, or other flammable material. The chlorine storage area should be protected by barriers or separated from other processes or materials, which might damage the storage containers. Storage areas should be clean so that accumulated trash or other combustible material does not present a fire hazard. Easy access to containers is important in the event of a leak. Even if night operations are not contemplated, effective lighting should be installed as an aid in dealing with possible night emergencies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

All personal protective equipment should be selected in accordance with the hazard assessment required by 29 CFR 1910.132 (d).

Respiratory Protection

Use appropriate NIOSH approved respirators in accordance with 29 CFR 1910.132 and 1910.134, to prevent overexposure. Respirators must be selected based on the airborne levels found in the workplace and must not exceed the working limits of the respirator. The recommended respiratory protection is an approved self-contained breathing apparatus or positive pressure airline with auxiliary self-contained air supply. A NIOSH approved cartridge-type respirator should be carried at all times when handling chlorine for escape purposes.

Eye Protection

Use splash proof safety goggles or appropriate full-face respirator. Follow the eye and face protection guidelines of 29 CFR 1910.132 and 1910.133. Where there is any possibility that an individual's eyes may be exposed to chlorine, an eye wash fountain (in accordance with 29 CFR 1910.151) should be within the immediate work area for emergency use.

Skin Protection

Chemical protective clothing and gloves must be used in accordance with 29 CFR 1910.132 and CFR 1910.138.

Ventilation

Provide general and/or local ventilation to control airborne levels below exposure guidelines. Local exhaust ventilation should comply with OSHA regulations and the American Conference of Governmental Industrial Hygienists, Industrial Ventilation - A Manual of Recommended Practice.

Occupational Exposure Guidelines for Chlorine

OSHA	PEL (Ceiling)	1.0 ppm
ACGIH	TLV-TWA	0.5 ppm
	TLV-STEL	1.0 ppm
NIOSH	REL (10hr TWA)	0.5 ppm
	IDLH	10 ppm

Material Safety Data Sheet: Chlorine**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	Amber colored liquid, vaporizes to greenish yellow gas
Odor	Pungent, irritating odor
Molecular Weight	70.9
Boiling Point	-34 °C (-29 °F)
Melting Point	-101°C (-150 °F)
Solubility	Slightly soluble in water (0.73% at 20 °C)
Specific Gravity- Gas	2.49 at 0 °C (air=1)
Specific Gravity- Liquid	1.47 at 0 °C (water = 1)
Vapor Pressure	98.3 psig at 25 °C (77 °F)
pH	Not Available

10. STABILITY AND REACTIVITY**Stability**

Stable under normal conditions

Polymerization

Hazardous polymerization does not occur

Hazardous Decomposition Products

None

Reactions with Water

Chlorine reacts with water to form a weak, corrosive solution of hydrochloric acid and hypochlorous acid.

Incompatible Materials

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.

Material Safety Data Sheet: Chlorine**11. TOXICOLOGICAL INFORMATION****Animal Toxicity**

Inhalation:	Rat LC ₅₀	293 ppm (1 hr)
	Mouse LC ₅₀	137 ppm (1 hr)

LC₅₀ = Air concentration that is lethal to 50% of a given species in a given period of time.

12. ECOLOGICAL INFORMATION

Chlorine gas will disperse to the atmosphere leaving no residue. Chlorine is toxic to fish. Keep out of lakes, streams or ponds.

Aquatic Toxicity

Fresh water fish/cold water fish: (Trout) – LC₅₀ = 0.006 - 0.60 mg/l of total residue chlorine at different life stages for different species.

Fresh water fish/warm water fish: LC₅₀ = 0.09 - 0.30 mg/l of total residue chlorine.

Waterfowl toxicity: 10 ppm/1 hr/tunicates/killed/saltwater

13. DISPOSAL CONSIDERATIONS

Waste Management Information: Do not dump into any sewers, on the ground, or into any body of water. Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules). Waste characterization and compliance with applicable laws are the responsibility of the waste generator.

14. TRANSPORTATION INFORMATION

Proper Shipping Name	Chlorine
DOT Hazard Class	2.3, (Poisonous gas)
DOT Shipping ID No.	UN 1017
DOT Labeling	Poison gas, Corrosive
RQ	10 lbs

Material Safety Data Sheet: Chlorine**15. REGULATORY INFORMATION****SARA Title III**

Section 302 and 304 of the Act; Extremely Hazardous Substances (40 CFR 355)

<u>COMPONENT</u>	<u>CAS No.</u>	<u>TPQ (lbs)</u>	<u>RQ (lbs)</u>
Chlorine	7782-50-5	100	10

Note: TPQ - Threshold Planning Quantity RQ - Reportable Quantity

Section 311 Hazard Categorization (40 CFR 370)

<u>ACUTE</u>	<u>CHRONIC</u>	<u>FIRE</u>	<u>PRESSURE</u>	<u>REACTIVE</u>
X	X	X	X	X

Section 313 Toxic Chemicals (40 CFR 372.65)

<u>COMPONENT</u>	<u>CAS No.</u>	<u>WT. %</u>
Chlorine	7782-50-5	>99%

CERCLA

Section 102(a) Hazardous Substances (40 CFR 302.4)

<u>COMPONENT</u>	<u>CAS No.</u>	<u>WT. %</u>	<u>RQ (lbs)</u>
Chlorine	7782-50-5	>99	10

RCRA

Not applicable.

TSCA

Chlorine is listed on the TSCA inventory.

Proposition 65

Chlorine is not listed on the California Proposition 65 list.

Canadian Environmental Protection Act (CEPA)

All substances in this product are listed on the Canadian Domestic Substances (DSL) list or are not required to be listed.

Canada Regulations (WHMIS)

Class A – Compressed Gas, Class C – Oxidizing Material, Class D (1A) – Material is toxic with short exposure and low dose, Class E – Corrosive Material

16. OTHER INFORMATION

NSF/ANSI Drinking Water Treatment Chemicals-This product is certified to NSF/ANSI Standard 60, Drinking Water Treatment Chemicals-Health Effects. The maximum use level for potable water is 30 mg/L.

IMPORTANT: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. **GEORGIA GULF CHEMICALS AND VINYLs, LLC MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA HEREIN.** Georgia Gulf will not be liable for claims relating to any party's use of or reliance on information and data contained herein regardless of whether it is claimed that the information and data are inaccurate, incomplete or otherwise misleading. This information relates to the material designated and may not be valid for such material used in combination with any other materials nor in any process.

MSDS Status: Revision Date 11/24/2008

Supersedes 12/21/2007