



Safety Data Sheet

Chlorine

Section 1: Product and Company Identification

Middlesex Gases & Technologies

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Product Code: Chlorine

Section 2: Hazards Identification



Danger

Hazard Classification:

Acute Aquatic Toxicity (Category 1)
Acute Gas Inhale Toxicity (Category 2)
Eye Effects (Category 2.A)
Gases Under Pressure
Skin Corrosion (Category 2)
Specific target organ toxicity (Single Exposure) (Category 3)

Hazard Statements:

Causes serious eye irritation
Causes skin irritation
Contains gas under pressure; may explode if heated
Fatal if inhaled
May cause respiratory irritation;
Very toxic to aquatic life

Precautionary Statements**Prevention:**

Wash thoroughly after handling.
Do not breathe dust/fume/gas/mist/ vapors/spray..
Wear eye protection/face protection.
Use only outdoors or in a well-ventilated area.
[In case of inadequate ventilation] wear respiratory protection.

Response:

Immediately call a poison center or doctor.

If on skin: Wash with plenty of water.

Specific treatment is urgent.

If swallowed: Rinse mouth. Do NOT induce vomiting.

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Storage:

Store in a well-ventilated place. Keep container tightly closed.

Protect from sunlight.

Store locked up.

Disposal:

Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

CAS #

7782-50-5

Chemical Substance	Chemical Family	Trade Names
CHLORINE	halogens, gas	CHLORINE MOLECULAR; DIATOMIC CHLORINE; DICHLORINE; MOLECULAR CHLORINE; UN 1017; Cl2

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.	Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Not likely route of exposure.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen. Avoid gastric lavage or emesis.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Non-flammable. Use appropriate extinguishing media for surrounding fire.	Non-flammable	<ul style="list-style-type: none">Full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatusNon-flammable.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment
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Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Evacuate area and downwind locations.	Avoid contact with combustible materials.	Stop leak if possible without personal risk. Reduce vapors with water spray. Dig holding area such as lagoon, pond or pit for containment. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Methods for Cleanup	Other Information
Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Section 7: Handling and Storage

Handling	Storage
Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).	Store and handle in accordance with all current regulations and standards. Protect from physical damage. Keep separated from incompatible substances. Store outside or in a detached building.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
CHLORINE: 1 ppm (3 mg/m ³) OSHA ceiling 0.5 ppm (1.5 mg/m ³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 1 ppm (3 mg/m ³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 0.5 ppm ACGIH TWA 1 ppm ACGIH STEL 0.5 ppm (1.45 mg/m ³) NIOSH recommended ceiling 15 minute(s)

Engineering Controls

Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Yellow or green	Yellow or green	N/A	Gas	Distinct odor, irritating odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Not combustible (does not burn). However, chlorine is a strong oxidizing agent and is a serious fire risk.	Not available	Not available	Not available	Not available	Not available

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-29.1 F (-33.97 C)	-150 F (-101 C)	5168 mmHg @ 21 C	2.49 (Air=1)	Not applicable	1.46% @ 0 C	Not applicable	0.01 ppm	Not applicable	0.01327 cP @ 20 C

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
70.906	Cl2	3.214 g/L @ 0 C	Not available	100%	Not applicable	Soluble: Alkali

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
Stable at normal temperatures and pressure. It reacts with water to form a weak, highly corrosive solutions of hydrochloric acid and hypochlorous acid, which can decompose to hydrochloric acid and oxygen.	Stable at normal temperatures and pressure. It reacts with water to form a weak, highly corrosive solutions of hydrochloric acid and hypochlorous acid, which can decompose to hydrochloric acid and oxygen.	Combustible materials, bases, metals, halogens, metal salts, reducing agents, amines, metal carbide, metal oxides, oxidizing materials, halo carbons, acids

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Corrosive hydrogen chloride, hydrochloric acid and hypochlorous acid.	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
0.86 mg/L (1 hr-Rat)	Not available	Burns, chest pain, difficulty breathing, headache, dizziness, hyperactivity, emotional disturbances, bluish skin color, lung damage, death

Eye Irritation	Skin Irritation	Sensitization
Burns	Burns	Harmful, toxic if inhaled, respiratory tract burns, skin burns, eye burns

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: LC50 Fathead minnow: 0.07 to 0.15 (96 hour); 390 ug/L 96 hour(s) LC50 (Mortality) Orangethroat darter (Etheostoma spectabile) Invertebrate toxicity: 637.5 ug/L 1 hour(s) LC50 (Mortality) Pacific oyster (Crassostrea gigas) Algal toxicity: 50-1000 ug/L 23 hour(s) (Population) Algae, phytoplankton, algal mat (Algae) Phyto toxicity: Not available Other toxicity: 20 ug/L 96 day(s) (Growth) Water-milfoil (Myriophyllum spicatum)	The atmospheric half-life and lifetime of this material due to photolysis is estimated at 10 and 14 minutes, respectively. The half-life of free resid	Not expected	Not available

Section 13: Disposal Considerations

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Chlorine	UN1017	2.3	Not applicable	2.3; 8	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone B

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
Chlorine	UN1017	2.3; 8	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
10 LBS RQ	100 LBS TPQ	10 LBS RQ

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	No	No	Yes

SARA 372.65

CHLORINE

OSHA Process Safety

1500 LBS TQ

State Regulations

CA Proposition 65
Not regulated.

Canadian Regulations

WHMIS Classification
A, D1A, E

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

NFPA Rating
HEALTH=4 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard