MATHESON
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Safety Data Sheet

Material Name: CHLORINE **SDS ID: MAT04600**

* * *Section 1 - PRODUCT AND COMPANY IDENTIFICATION* * *

Product Identifier: CHLORINE

Manufacturer Information

MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920

General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Chemical Family

halogens, gas

Synonyms

MTG MSDS 22; CHLORINE MOLECULAR; DIATOMIC CHLORINE; DICHLORINE; MOLECULAR CHLORINE; UN 1017; Cl2; RTECS: FO2100000

Product Use

industrial

Usage Restrictions

None known.

* * *Section 2 - HAZARDS IDENTIFICATION* * *

EMERGENCY OVERVIEW

Color: yellow or green
Physical Form: gas
Odor: distinct odor, irritating odor
Health Hazards: harmful if inhaled, respiratory tract burns, skin burns, eye burns
Physical Hazards: Containers may rupture or explode if exposed to heat. May ignite combustibles.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: burns, vomiting, chest pain, difficulty breathing, headache, dizziness, hyperactivity, emotional disturbances, bluish skin color, lung congestion, lung damage, death
Long Term: burns, lack of sense of smell, tooth decay, difficulty breathing, lung damage

Skin

Short Term: burns, frostbite
Long Term: burns

Eye

Short Term: burns, frostbite
Long Term: burns

Ingestion

Short Term: ingestion of a gas is unlikely
Long Term: ingestion of a gas is unlikely

* * *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

CAS	Component	Percent
7782-50-5	CHLORINE	100

* * *Section 4 - FIRST AID MEASURES* * *

Inhalation

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.

Skin

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.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If a large amount is swallowed, get medical attention.

Note to Physicians

For inhalation, consider oxygen.

Avoid gastric lavage or emesis.

* * *Section 5 - FIRE FIGHTING MEASURES* * *

See Section 9 for Flammability Properties

NFPA Ratings: Health: 4 **Fire:** 0 **Reactivity:** 0 **Other:** Oxidizer

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Oxidizer. May ignite or explode on contact with combustible materials. Containers may rupture or explode if exposed to heat.

Extinguishing Media

water

Large fires: Flood with fine water spray.

Unsuitable Extinguishing Media

Do not use dry chemicals, carbon dioxide or halogenated extinguishing agents.

Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. For small fires, contain and let burn. Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuation radius: 800 meters (1/2 mile).

Thermal Decomposition Products

Water or Moisture: hypochlorous acid, hydrochloric acid

* * *Section 6 - ACCIDENTAL RELEASE MEASURES* * *

Air Release

Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

Soil Release

Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

Water Release

Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment.

Occupational spill/release

Stop leak if possible without personal risk. Avoid contact with combustible materials. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. 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). Do not touch spilled material.

* * *Section 7 - HANDLING AND STORAGE* * *

Handling Procedures

Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Storage Procedures

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. NFPA 430 Code for the Storage of Liquid and Solid Oxidizing Materials. Store in a cool, dry place. Store in a well-ventilated area. Protect from sunlight. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. 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 Part B).

* * *Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION* * *

Component Analysis

CHLORINE (7782-50-5)

ACGIH:	0.5 ppm TWA
	1 ppm STEL
OSHA (final):	1 ppm Ceiling; 3 mg/m3 Ceiling
OSHA (vacated):	1 ppm STEL; 3 mg/m3 STEL
	0.5 ppm TWA; 1.5 mg/m3 TWA
NIOSH:	0.5 ppm Ceiling (15 min); 1.45 mg/m3 Ceiling (15 min)

Component Biological Limit Values

There are no biological limit values for any of this product's components.

IDLH

10 ppm

Ventilation

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

5 ppm

Any air-purifying half-mask respirator equipped with cartridge(s) providing protection against the compound of concern.

Any supplied-air respirator.

10 ppm

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with cartridge(s) providing protection against this substance.

Any air-purifying respirator with a full facepiece and a canister providing protection against this substance.

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions -

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.

Any appropriate escape-type, self-contained breathing apparatus.

* * *Section 9 - PHYSICAL AND CHEMICAL PROPERTIES* * *

Physical State:	Gas	**Appearance:**	Not available
Color:	yellow or green	**Physical Form:**	gas
Odor:	distinct odor, irritating odor	**Odor Threshold:**	0.01 ppm
pH:	Not available	**Melting/Freezing Point:**	-101 °C
Boiling Point:	-35 °C	**Flash Point:**	not flammable
Decomposition:	Not available	**Evaporation Rate:**	Not available
Vapor Pressure:	5168 mmHg @ 21 °C	**Vapor Density (air = 1):**	2.49
Density:	3.214 g/L @ 0 °C	**Specific Gravity (water=1):**	1.5649 @ -35 °C (liquid)
Water Solubility:	1.46 % @ 0 °C	**Log KOW:**	Not available
Auto Ignition:	Not available	**Viscosity:**	0.01327 cP @20 °C
Molecular Weight:	70.906	**Molecular Formula:**	Cl2

Solvent Solubility

Soluble: alkali, chlorides, alcohols

* * *Section 10 - STABILITY AND REACTIVITY* * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid contact with combustible materials. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers. May ignite or explode on contact with combustible materials.

Materials to Avoid

combustible materials, bases, metals, halogens, metal salts, reducing agents, amines, metal carbide, metal oxides, oxidizing materials, halo carbons, acids, arsenic, calcium, iodine, mercuric oxide, ethers, fluorine

Decomposition Products

chlorine

Water or Moisture: hypochlorous acid, hydrochloric acid

Possibility of Hazardous Reactions

Will not polymerize.

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

CHLORINE (7782-50-5)

Inhalation LC50 Rat 293 ppm 1 h

Acute Toxicity Level

CHLORINE (7782-50-5)

Toxic: inhalation

Component Carcinogenicity

CHLORINE (7782-50-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Irritation

No animal testing data available for skin or eyes.

Local Effects

CHLORINE (7782-50-5)

Corrosive: inhalation, skin, eye

Medical Conditions Aggravated by Exposure

heart problems

* * *Section 12 - ECOLOGICAL INFORMATION* * *

Component Analysis - Aquatic Toxicity

CHLORINE (7782-50-5)

Fish: 96 Hr LC50 Lepomis macrochirus: 0.44 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.014 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.014 mg/L; 96 Hr LC50 Oncorhynchus mykiss: 0.104 - 0.168 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.08 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 0.1 mg/L

Invertebrate: 48 Hr LC50 Daphnia magna: 0.017 mg/L

* * *Section 13 - DISPOSAL CONSIDERATIONS* * *

Disposal Methods

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

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

* * *Section 14 - TRANSPORT INFORMATION* * *

US DOT Information

Shipping Name: Chlorine
UN/NA #: UN1017 **Hazard Class:** 2.3
Required Label(s): 2.3, 5.1, 8
Additional Info.: Toxic-Inhalation Hazard Zone B

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS	
CHLORINE	7782-50-5	DOT regulated marine pollutant

TDG Information

Shipping Name: Chlorine
UN #: UN1017 **Hazard Class:** 2.3
Required Label(s): 2.3, 8

* * *Section 15 - REGULATORY INFORMATION* * *

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

CHLORINE (7782-50-5)

SARA 302: 100 lb TPQ
SARA 304: 10 lb EPCRA RQ
SARA 313: 1.0 % de minimis concentration
CERCLA: 10 lb final RQ; 4.54 kg final RQ
OSHA (safety): 1500 lb TQ

SARA 311/312

Acute Health: Yes **Chronic Health:** Yes **Fire:** Yes **Pressure:** Yes **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
CHLORINE	7782-50-5	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List

CHLORINE (7782-50-5)

1 %

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
CHLORINE	7782-50-5	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

* * *Section 16 - OTHER INFORMATION* * *

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

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