Material Name: CHLORINE

**Section 1 - IDENTIFICATION**

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)

Product Identifier: CHLORINE

Trade Names/Synonyms
MTG MSDS 22; CHLORINE MOLECULAR; DIATOMIC CHLORINE; DICHLORINE; MOLECULAR CHLORINE; UN 1017; Cl2; RTECS: FO2100000

Chemical Family
halogens, gas

Product Use
industrial

Restrictions on Use
None known.

**Section 2 - HAZARDS IDENTIFICATION**

GHS Classification
- Oxidizing gas, Category 1
- Gas under pressure, Liquefied gas
- Acute toxicity, Category 2
- Skin corrosion/irritation, Category 1
- Eye damage/irritation, Category 1
- Specific target organ systemic toxicity following single exposure, Category 1
- Specific target organ systemic toxicity following repeated exposure, Category 1
- Hazardous to the aquatic environment - acute hazard, Category 1

GHS LABEL ELEMENTS
Symbol(s)

Signal Word
DANGER

Hazard Statement(s)
- May cause or intensify fire; oxidizer
- Contains gas under pressure; may explode if heated
- Fatal if inhaled
- Causes severe skin burns and eye damage
- Causes serious eye damage
Safety Data Sheet

Causes damage to organs
Causes damage to organs through prolonged or repeated exposure
Very toxic to aquatic life

Precautionary Statement(s)
Keep away from clothing and other combustible materials. Do not breathe gas, fumes, vapor, or spray. Do not eat, drink, or smoke when using this product. Keep reduction valves free from grease and oil. Wear respiratory protection. Wear protective gloves/clothing and eye/face protection. Use only outdoors or in a well-ventilated area. In case of fire, stop leak if safe to do so. Wash thoroughly after handling. Avoid release to the environment. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor/physician. Specific treatment is urgent, see first aid section of Safety Data Sheet. Store locked up. Keep container tightly closed. Store in a well-ventilated place. Protect from sunlight. Collect spillage. Dispose in accordance with all applicable regulations.

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

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7782-50-5</td>
<td>CHLORINE</td>
<td>100</td>
</tr>
</tbody>
</table>

* * *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.

**Symptoms: Immediate**
respiratory tract burns, skin burns, eye burns, respiratory system effects, central nervous system effects

**Symptoms: Delayed**
respiratory tract burns, skin burns, eye burns, kidney damage, tooth erosion, respiratory system effects

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

See Section 9 for Flammability Properties

**Specific Hazards Arising from the Chemical**
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).

**Hazardous Combustion Products**

Water or Moisture: hypochlorous acid, hydrochloric acid

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**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Personal Precautions**

Wear personal protective clothing and equipment, see Section 8.

**Environmental Precautions**

Avoid release to the environment. Keep out of water supplies and sewers. 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).

**Methods for Containment**

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Reduce vapors with water spray.

**Cleanup Methods**

Stop leak if safe to do so - Prevent entry into waterways, drains, or confined areas. Do not touch spilled material. Eliminate all ignition sources if safe to do so. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.

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**Section 7 - HANDLING AND STORAGE**

**Handling Procedures**


**Storage Procedures**


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

**Component Exposure Limits**

**CHLORINE (7782-50-5)**

- **ACGIH:** 0.5 ppm TWA
  1 ppm STEL
- **Europe:** 0.5 ppm STEL; 1.5 mg/m³ STEL
- **OSHA (Final):** 1 ppm Ceiling; 3 mg/m³ Ceiling
- **OSHA (Vacated):** 0.5 ppm TWA; 1.5 mg/m³ TWA
  1 ppm STEL; 3 mg/m³ STEL
- **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

**Engineering Controls**

Ensure adequate ventilation. 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.
**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Gas</td>
</tr>
<tr>
<td>Color</td>
<td>yellow or green</td>
</tr>
<tr>
<td>Odor</td>
<td>distinct odor, irritating odor</td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>-35 °C</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>-101 °C</td>
</tr>
<tr>
<td>Density</td>
<td>3.214 g/L @ 0 °C</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>1.46 % @ 0 °C</td>
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<tr>
<td>Auto Ignition</td>
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</tr>
<tr>
<td>Molecular Weight</td>
<td>70.906</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>5168 mmHg @ 21 °C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>not flammable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>1.5649 @ -35 °C (liquid)</td>
</tr>
<tr>
<td>Log KOW</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.01327 cP @ 20 °C</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Cl2</td>
</tr>
</tbody>
</table>

Solvent Solubility
- 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.

Possibility of Hazardous Reactions
- Will not polymerize.

Incompatible Materials
- 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

Hazardous Decomposition
- Water or Moisture: hypochlorous acid, hydrochloric acid

**Section 11 - TOXICOLOGICAL INFORMATION**

Acute and Chronic Toxicity
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
RTECS Acute Toxicity (selected)  
The components of this material have been reviewed, and RTECS publishes the following endpoints:  
CHLORINE (7782-50-5)  
Inhalation: 368 mg/m3/30 minute(s) Inhalation Mouse LC50; 137 ppm/1 hour Inhalation Mouse LC50  
293 ppm/1 hour Inhalation Rat LC50  

Acute Toxicity Level  
CHLORINE (7782-50-5)  
Toxic: inhalation  

Immediate Effects  
respiratory tract burns, skin burns, eye burns, respiratory system effects, central nervous system effects  

Delayed Effects  
respiratory tract burns, skin burns, eye burns, tooth erosion, kidney damage, respiratory system effects  

Irritation/Corrosivity Data  
No animal testing data available for skin or eyes.  

RTECS Irritation  
The components of this material have been reviewed and RTECS publishes no data as of the date on this document.  

Local Effects  
CHLORINE (7782-50-5)  
Corrosive: inhalation, skin, eye  

Respiratory Sensitizer  
No data available.  

Dermal Sensitizer  
No data available.  

Carcinogenicity  
Component Carcinogenicity  
CHLORINE (7782-50-5)  
ACGIH: A4 - Not Classifiable as a Human Carcinogen  

RTECS Mutagenic  
The components of this material have been reviewed, and RTECS publishes data for one or more components.  

RTECS Reproductive Effects  
The components of this material have been reviewed, and RTECS publishes the following endpoints:  
CHLORINE (7782-50-5)  
565 mg/kg Oral Rat TDLo (8 week, prior to copulation 2 week, 3 week, continuous)  

RTECS Tumorigenic  
The components of this material have been reviewed, and RTECS publishes data for one or more components.  

Specific Target Organ Toxicity - Single Exposure  
respiratory system, central nervous system  

Specific Target Organ Toxicity - Repeated Exposure  
teeth, kidneys, respiratory system  

Aspiration Hazard  
Not applicable.  

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

Abiotic Degradation
Rapidly undergoes disproportionation in water to form hypochlorous acid and chloride ion.

Persistence and Degradability
No data available.

Bioaccumulative Potential
No data available.

Mobility in Environmental Media
No data available.

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

IMDG Information

Shipping Name: Chlorine
UN #: UN1017 Hazard Class: 2.3
Required Label(s): 2.3, 5.1, 8
**Safety Data Sheet**

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

### Component Marine Pollutants

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>DOT regulated marine pollutant</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLORINE</td>
<td>7782-50-5</td>
<td></td>
</tr>
</tbody>
</table>

### Component Marine Pollutants (IMDG)

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

**CHLORINE (7782-50-5)**

IMDG regulated marine pollutant (UN1017)

### **Section 15 - REGULATORY INFORMATION**

#### Component Analysis

**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 Hazardous Categories

- **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:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLORINE</td>
<td>7782-50-5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Not regulated under California Proposition 65

### Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
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<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>NZ</th>
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</thead>
<tbody>
<tr>
<td>CHLORINE</td>
<td>7782-50-5</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### **Section 16 - OTHER INFORMATION**

**NFPA Ratings:**

- **Health:** 4  
- **Fire:** 0  
- **Reactivity:** 0  
- **Other:** Oxidizer  

Hazard Scale:  

- 0 = Minimal  
- 1 = Slight  
- 2 = Moderate  
- 3 = Serious  
- 4 = Severe
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