** Section 1 - PRODUCT AND COMPANY IDENTIFICATION **

Material Name: **CARBON DIOXIDE, GAS**

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

inorganic, gas

Synonyms

MTG MSDS 17; CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2; RTECS: FF6400000

** Section 2 - HAZARDS IDENTIFICATION **

EMERGENCY OVERVIEW

Color: colorless
Physical Form: gas
Odor: odorless
Health Hazards: difficulty breathing
Physical Hazards: Containers may rupture or explode if exposed to heat.
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

SDS ID: MAT04260

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: changes in blood pressure, ringing in the ears, nausea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, tingling sensation, tremors, weakness, visual disturbances, suffocation, convulsions, unconsciousness, coma

Long Term: no information on significant adverse effects

Skin

Short Term: blisters, frostbite

Long Term: no information on significant adverse effects

Eye

Short Term: frostbite, blurred vision

Long Term: no information on significant adverse effects

Ingestion

Short Term: ingestion of a gas is unlikely

Long Term: ingestion of a gas is unlikely

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

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>124-38-9</td>
<td>CARBON DIOXIDE, GAS</td>
<td>100</td>
</tr>
</tbody>
</table>

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Carbon dioxide and ethylene oxide mixtures (8070-50-6).

*** 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.
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Contact with liquid: 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.

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

See Section 9 for Flammability Properties

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 0

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

Flammable Properties

Negligible fire hazard. Containers may rupture or explode if exposed to heat.

Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

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 tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Use extinguishing agents appropriate for surrounding fire. Cool containers with water spray until well after the fire is out. Do not get water directly on material. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.
**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Occupational spill/release**

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

**Section 7 - HANDLING AND STORAGE**

**Storage Procedures**


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

**Component Analysis**

MISSION COXIDE, GAS (124-38-9)

ACGIH: 5000 ppm TWA

30000 ppm STEL

OSHA (final): 5000 ppm TWA; 9000 mg/m3 TWA

OSHA (vacated): 30000 ppm STEL; 54000 mg/m3 STEL

10000 ppm TWA; 18000 mg/m3 TWA

NIOSH: 30000 ppm STEL; 54000 mg/m3 STEL

5000 ppm TWA; 9000 mg/m3 TWA

**Component Biological Limit Values**

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

**IDLH**

40,000 ppm

**Ventilation**

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.
PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

Glove Recommendations

Wear insulated gloves.

Respiratory Protection

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

40,000 ppm

Any supplied-air respirator.

Any self-contained breathing apparatus 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 appropriate escape-type, self-contained breathing apparatus.
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

Physical State: Gas
Color: colorless
Odor: odorless
Taste: acid taste
Melting/Freezing Point: -57 °C @ 4000 mmHg
Flash Point: none
Evaporation Rate: Not available
Vapor Density (air = 1): 1.5
Water Solubility: soluble
Auto Ignition: Not available
Sublimation Point: -78.50 °C
Volatile by Volume: 100 %
Molecular Formula: C-O2

Appearance: Not available
Physical Form: gas
Odor Threshold: Not available
Boiling Point: -78.50 - -61.7 °C (liquid)
Decomposition: Not available
Vapor Pressure: 43700 mmHg @ 21 °C
Specific Gravity (water=1): 1.527 @ 21 °C
Log KOW: Not available
Viscosity: 0.00000203 Pa.s @ 20 °C
Triple Point: -56.6 °C @ 3883.6 mmHg
Molecular Weight: 44.01

Solvent Solubility

Soluble: alcohol, acetone, hydrocarbons, organic solvents

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

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Protect from physical damage and heat. Containers may rupture or explode if exposed to heat. Avoid contact with water or moisture.

Materials to Avoid

combustible materials, oxidizing materials, metal salts, reducing agents, metal carbide, metals, bases, potassium, sodium, ethyleneimine

Decomposition Products

oxides of carbon
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

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:

CARBON DIOXIDE, GAS (124-38-9)

Inhalation LC50 Mouse 836 ppm 4 h (related to Carbon dioxide and ethylene oxide mixtures)

Acute Toxicity Level

CARBON DIOXIDE, GAS (124-38-9)

Non Toxic: inhalation

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

Target Organs

CARBON DIOXIDE, GAS (124-38-9)

central nervous system

Medical Conditions Aggravated by Exposure

heart or cardiovascular disorders, respiratory disorders

*** Section 12 - ECOLOGICAL INFORMATION***

Component Analysis - Aquatic Toxicity

No LOLO ecotoxicity data are available for this product's components.

*** Section 13 - DISPOSAL CONSIDERATIONS***

Disposal Methods

Dispose in accordance with all applicable regulations.
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: Carbon dioxide
UN/NA #: UN1013  Hazard Class: 2.2
Required Label(s): 2.2

TDG Information

Shipping Name: Carbon dioxide
UN #: UN1013  Hazard Class: 2.2
Required Label(s): 2.2

*** Section 15 - REGULATORY INFORMATION***

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312

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

U.S. State Regulations

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

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<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>

Not regulated under California Proposition 65
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS  
SDS ID: MAT04260

Canada WHMIS

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

CARBON DIOXIDE, GAS (124-38-9)

1%

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>US</th>
<th>CA</th>
<th>EU</th>
<th>AU</th>
<th>PH</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
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<tbody>
<tr>
<td>CARBON DIOXIDE, GAS</td>
<td>124-38-9</td>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
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<td>Yes</td>
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</table>

*** 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; NJCSR - 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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