



MATHESON

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Safety Data Sheet

Material Name **CARBON DIOXIDE, GAS**

SDS ID: MAT04260

Section 1 - IDENTIFICATION

Product Identifier: CARBON DIOXIDE, GAS

Trade Names/Synonyms

MTG SDS 17; CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2

Chemical Family

inorganic, gas

Recommended Use

Industrial and Specialty Gas Applications

Restrictions on Use

None known.

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)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with 29 CFR 1910.1200

Gas under pressure, Compressed gas

Specific Target Organ Toxicity - Single Exposure, Category 3 (central nervous system)

GHS LABEL ELEMENTS

Symbol(s)



Signal Word

WARNING

Hazard Statement(s)

Contains gas under pressure; may explode if heated

May cause drowsiness and dizziness

May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Prevention

Avoid breathing gas. Use only outdoors or in a well-ventilated area.

Response

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

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Storage

Protect from sunlight. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Hazard(s) Not Otherwise Classified

May cause frostbite upon sudden release of compressed gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component	Percent
124-38-9	Carbon dioxide	100

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

Description of Necessary 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

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

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects

Acute

suffocation, frostbite, central nervous system depression

Delayed

No information on significant adverse effects.

Indication of Immediate Medical Attention and Special Treatment

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Suitable Extinguishing Media

carbon dioxide, regular dry chemical, water spray, foam

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Specific Hazards Arising from the Chemical

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

Hazardous Combustion Products

Combustion: oxides of carbon

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Fire Fighting Measures

Use extinguishing agents appropriate for surrounding fire. 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). Do not get water directly on material. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Special Protective Equipment and Precautions for Firefighters

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

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

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Stop leak if possible without personal risk. Do not touch or walk through spilled material. Use water spray to reduce vapors or divert vapor cloud drift. Do not direct water at spill or source of leak. If possible, turn leaking containers so that gas escapes rather than liquid. Allow substance to evaporate. Ventilate closed spaces before entering. Stay upwind and keep out of low areas.

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

Precautions for Safe Handling

Avoid breathing gas. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling.

Conditions for Safe Storage, including any Incompatibilities

Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a well-ventilated area. Keep container tightly closed. Protect from sunlight. Store locked up. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

Incompatibilities combustible materials, oxidizing materials, metal salts, reducing agents, metal carbide, metals, bases

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

Component Exposure Limits

Carbon dioxide (124-38-9)

ACGIH: 5000 ppm TWA
30000 ppm STEL

Europe: 5000 ppm TWA; 9000 mg/m³ TWA

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

OSHA (Vacated): 10000 ppm TWA; 18000 mg/m³ TWA
30000 ppm STEL; 54000 mg/m³ STEL

NIOSH: 5000 ppm TWA; 9000 mg/m³ TWA
30000 ppm STEL; 54000 mg/m³ STEL

Component Biological Limit Values

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

IDLH

40,000 ppm

Appropriate Engineering Controls

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

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Individual Protection Measures, such as Personal Protective Equipment

Eyes/Face Protection

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.

Skin Protection

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.

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

Physical State: Gas	Appearance: Colorless gas
Color: colorless	Physical Form: compressed gas
Odor: odorless	Odor Threshold: Not available
Taste: acid taste	pH: acidic in solution
Melting/Freezing Point: -57 °C @4000 mmHg	Boiling Point: -78.5 °C (sublimation)
Flash Point: not flammable	Decomposition: Not available
Evaporation Rate: Not available	LEL: Not available
UEL: Not available	Vapor Pressure: 43700 mmHg @ 21 °C
Vapor Density (air = 1): 1.5	Specific Gravity (water=1): 1.527 @ 21 °C
Water Solubility: soluble	Log KOW: Not available
Auto Ignition: Not available	Viscosity: 14.9 uPa-sec @25 °C
Sublimation Point: -78.5 °C	Triple Point: -56.6 °C @3883.6 mmHg
Volatility by Volume: 100 %	Molecular Weight: 44.01
Molecular Formula: C-O2	Critical Temperature: 304.13 K
Flammability (solid, gas): Not flammable	

Other Property Information

No additional information is available.

Solvent Solubility

Soluble: alcohol, acetone, hydrocarbons, organic solvents

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Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

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

Incompatible Materials

combustible materials, oxidizing materials, metal salts, reducing agents, metal carbide, metals, bases

Hazardous Decomposition

Combustion: oxides of carbon

Section 11 - TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and no selected endpoints have been identified.

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Carbon dioxide (124-38-9)

Inhalation: 361 gm/m³/2 hour Inhalation Mouse LC50; 200000 ppm/2 hour Inhalation Mouse LC50

Acute Toxicity Level

Carbon dioxide (124-38-9)

Non Toxic: inhalation

Information on Likely Routes of Exposure

Inhalation

sensitivity to light, changes in blood pressure, nausea, irregular heartbeat, headache, drowsiness, dizziness, disorientation, sleep disturbances, emotional disturbances, tingling sensation, tremors, muscle cramps, visual disturbances, suffocation, convulsions, unconsciousness, coma, difficulty breathing, blood disorders

Ingestion

ingestion of a gas is unlikely

Skin Contact

blisters, frostbite

Eye Contact

irritation, blurred vision, frostbite

Immediate Effects

suffocation, frostbite, central nervous system depression

Delayed Effects

No information on significant adverse effects.

Medical Conditions Aggravated by Exposure

heart or cardiovascular disorders, respiratory disorders

Irritation/Corrosivity Data

No data available.

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RTECS Irritation

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

Target Organs

Carbon dioxide (124-38-9)
central nervous system

Respiratory Sensitization

No test data available.

Dermal Sensitization

No data available.

Carcinogenicity

Component Carcinogenicity

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

Mutagenic Data

No data available.

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Carbon dioxide (124-38-9)

55 pph Inhalation Mouse TLo (4 hour, 6 day(s)); 55 pph Inhalation Mouse TLo (2 hour, 3 day(s)); 2 pph Inhalation Mouse TLo (8 hour, pregnant 10 day(s)); 13 pph Inhalation Rabbit TLo (4 hour, pregnant 9-12 day(s)); 6 pph Inhalation Rat TLo (24 hour, pregnant 10 day(s)); 6 pph Inhalation Rat TLo (24 hour, pregnant 10 day(s))

Tumorigenic Data

No data available.

Specific Target Organ Toxicity - Single Exposure

central nervous system

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration Hazard

Not applicable.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

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

Persistence and Degradability

No data available.

Bioaccumulative Potential

No data available.

Mobility

No data available.

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.

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Section 14 - TRANSPORT INFORMATION

US DOT Information

Shipping Name: Carbon dioxide

UN/NA #: UN1013 Hazard Class: 2.2

Required Label(s): 2.2

IMDG Information

Shipping Name: Carbon dioxide

UN #: UN1013 Hazard Class: 2.2

Required Label(s): 2.2

Section 15 - REGULATORY INFORMATION

Component Analysis

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 Hazardous Categories

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:

Component	CAS	CA	MA	MN	NJ	PA
Carbon dioxide	124-38-9	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
Carbon dioxide	124-38-9	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

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

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

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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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End of Sheet MAT04260