## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Material Name</th>
<th>CARBON DIOXIDE, GAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>CARBONIC ACID GAS; CARBONIC ANHYDRIDE; CARBON DIOXIDE; CARBON OXIDE; UN 1013; CO2;</td>
</tr>
<tr>
<td>Chemical Family</td>
<td>inorganic, Gas</td>
</tr>
<tr>
<td><strong>Product Description</strong></td>
<td>Classification determined in accordance with Compressed Gas Association standards.</td>
</tr>
<tr>
<td><strong>Product Use</strong></td>
<td>Industrial and Specialty Gas Applications.</td>
</tr>
<tr>
<td><strong>Restrictions on Use</strong></td>
<td>None known.</td>
</tr>
</tbody>
</table>

**Details of the supplier of the safety data sheet**
- SPECIALTY CHEMICAL PRODUCTS
- 1407 Pennsylvania Ave.
- South Houston, TX 77587
- General Information: 713-944-0900
- Emergency #: 1-800-424-9300 (CHEMTREC)
- Outside the US: 1-703-527-3887 (Call collect)

## Section 2 - HAZARDS IDENTIFICATION

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**
- Gases Under Pressure - Liquefied gas
- Simple Asphyxiant

**GHS Label Elements**
- Symbol(s)

![GHS Symbol]

**Signal Word**
- Warning

**Hazard Statement(s)**
- Contains gas under pressure; may explode if heated.
- May displace oxygen and cause rapid suffocation.

**Precautionary Statement(s)**
- **Prevention**
  - None needed according to classification criteria.
- **Response**
  - None needed according to classification criteria.
- **Storage**
  - Protect from sunlight. Store in a well-ventilated place.
- **Disposal**
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Other Hazards**
May cause frostbite upon sudden release of liquefied gas.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>124-38-9</td>
<td>Carbon dioxide</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**
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 swallowed, get medical attention.

**Most Important Symptoms/Effects**

- **Acute**
  - Frostbite, suffocation, Depression of central nervous system.
- **Delayed**
  - No information on significant adverse effects.

**Note to Physicians**
For inhalation, consider oxygen.

### Section 5 - FIRE FIGHTING MEASURES

**Extinguishing Media**

- **Suitable Extinguishing Media**
  Use extinguishing agents appropriate for surrounding fire.

- **Unsuitable Extinguishing Media**
  None known.

**Special Hazards Arising from the Chemical**
Negligible fire hazard. Containers may rupture or explode if exposed to heat.

**Hazardous Combustion Products**
Oxides of carbon.

**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.

**Special Protective Equipment and Precautions for Firefighters**
Wear personal protective clothing and equipment such as 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
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. 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).

Environmental Precautions
Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray.

Conditions for Safe Storage, Including any Incompatibilities
Protect from sunlight. Store in a well-ventilated place.

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

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

<table>
<thead>
<tr>
<th>Carbon dioxide</th>
<th>124-38-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH:</td>
<td>5000 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>30000 ppm STEL</td>
</tr>
<tr>
<td>NIOSH:</td>
<td>5000 ppm TWA ; 9000 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>30000 ppm STEL ; 54000 mg/m3 STEL</td>
</tr>
<tr>
<td></td>
<td>40000 ppm IDLH</td>
</tr>
<tr>
<td>Europe:</td>
<td>5000 ppm TWA ; 9000 mg/m3 TWA</td>
</tr>
<tr>
<td>OSHA (US):</td>
<td>5000 ppm TWA ; 9000 mg/m3 TWA</td>
</tr>
<tr>
<td>Mexico:</td>
<td>5000 ppm TWA VLE-PPT ; 9000 mg/m3 TWA VLE-PPT</td>
</tr>
<tr>
<td></td>
<td>15000 ppm STEL [PPT-CT ]; 27000 mg/m3 STEL [PPT-CT ]</td>
</tr>
</tbody>
</table>

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)
There are no biological limit values for any of this product's components.

Engineering Controls
Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.
Individual Protection Measures, such as Personal Protective Equipment
Eye/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.
Respiratory Protection
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Glove Recommendations
For the gas. Protective clothing is not required. For the liquid. Wear appropriate protective, cold insulating clothing.

### Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Not available</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-57 °C at 4000 mmHg (-71 °F)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>-78.5 - -61.7 °C (-109 - -79 °F Liquid)</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>1.5</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>1.527 at 21 °C</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>2.03E-06 Pa.s</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
</tr>
<tr>
<td>Physical Form</td>
<td>gas</td>
</tr>
<tr>
<td>Taste</td>
<td>acid taste</td>
</tr>
<tr>
<td>Volatility by Volume</td>
<td>100 %</td>
</tr>
</tbody>
</table>
Material Name: CARBON DIOXIDE, GAS

<table>
<thead>
<tr>
<th>Molecular Formula</th>
<th>C-O2</th>
<th>Molecular Weight</th>
<th>44.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>triple point</td>
<td>-56.6 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Solvent Solubility
Soluble
alcohol, acetone, Hydrocarbons, organic solvents

**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, potassium, sodium, ethyleneimine

**Hazardous decomposition products**
Oxides of carbon

**Section 11 - TOXICOLOGICAL INFORMATION**

**Information on Likely Routes of Exposure**

**Inhalation**
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

**Skin Contact**
blisters, frostbite

**Eye Contact**
frostbite, blurred vision

**Ingestion**
ingestion of a gas is unlikely

**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.

**Product Toxicity Data**

**Acute Toxicity Estimate**
No data available.

**Immediate Effects**
Frostbite, suffocation, Depression of central nervous system.

**Delayed Effects**
No information on significant adverse effects.

**Irritation/Corrosivity Data**
No data available.

**Respiratory Sensitization**
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS          SDS ID: 00232335

No data available.

Dermal Sensitization
No data available.

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

Germ Cell Mutagenicity
No data available.

Tumorigenic Data
No data available.

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
Category 3. central nervous system

Specific Target Organ Toxicity - Repeated Exposure
No information on significant adverse effects.

Aspiration hazard
No data available.

Medical Conditions Aggravated by Exposure
heart or cardiovascular disorders, respiratory disorders

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability
No information available for the product.

Bioaccumulative Potential
No information available for the product.

Mobility
No information available for the product.

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
Hazard Class: 2.2
UN/NA #: UN1013
Required Label(s): 2.2

TDG Information:
Shipping Name: CARBON DIOXIDE
Hazard Class: 2.2
UN#: UN1013
Required Label(s): 2.2
International Bulk Chemical Code
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

SDS ID: 00232335

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations
None of this product's 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 Section 311/312 (40 CFR 370 Subparts B and C) reporting categories
Gas Under Pressure; Simple Asphyxiant

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>Carbon dioxide</td>
<td>124-38-9</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
Not listed under California Proposition 65.

Canada Regulations
Canadian WHMIS Ingredient Disclosure List (IDL)
Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL.

<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>Carbon dioxide</td>
<td>124-38-9</td>
<td>1 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Component Analysis - Inventory
Carbon dioxide (124-38-9)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>DSL</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

NFPA Ratings
Health: 2 Fire: 0 Instability: 0 Other: SA
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes
Updated: 02/03/2017

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive;
Safety Data Sheet

Material Name: CARBON DIOXIDE, GAS

DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); 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; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH-Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Se - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:
Specialty Chemical Products makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Specialty Chemical Products shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.