Safety Data Sheet

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

SDS ID: 00244742

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
<0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

Product Description
Classification determined in accordance with Compressed Gas Association standards.

Product Use
Industrial and Specialty Gas Applications.

Restrictions on Use
None known.

Details of the supplier of the safety data sheet
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 paragraph (d) of 29 CFR 1910.1200.

Gases Under Pressure - Compressed gas
Simple Asphyxiant.

GHS Label Elements

Symbol(s)

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

Other Hazards
Rapid release of compressed gas may cause frostbite.
Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-59-7</td>
<td>Helium</td>
<td>&gt;99</td>
</tr>
<tr>
<td>75-15-0</td>
<td>Carbon disulfide</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>7783-06-4</td>
<td>Hydrogen sulfide</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>463-58-1</td>
<td>Carbonyl sulfide</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

**Inhalation**
Remove person to fresh air and keep comfortable for breathing. 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**
Rinse cautiously with water for several 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**
frostbite, suffocation

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

**Indication of any immediate medical attention and special treatment needed**
For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

**Extinguishing Media**

**Suitable Extinguishing Media**
regular dry chemical, carbon dioxide

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

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

**Hazardous Combustion Products**
miscellaneous decomposition products

**Fire Fighting Measures**
Move container from fire area if it can be done without risk. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Cool containers with water spray until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Apply water from a
protected location or from a safe distance. Reduce vapors with water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Consider downwind evacuation if material is leaking. **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**

Stop leak if possible without personal risk. If possible, turn leaking containers so that gas escapes rather than liquid. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Do not touch or walk through spilled material. Do not direct water at spill or source of leak. Prevent entry into waterways, sewers, basements, or confined areas. Allow substance to evaporate. Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.

**Environmental Precautions**

Avoid release to the environment.

**Section 7 - HANDLING AND STORAGE**

**Precautions for Safe Handling**

Avoid breathing gas. Use only outdoors or in a well-ventilated area. Observe good hygiene and safety practices when handling this product.

**Conditions for Safe Storage, Including any Incompatibilities**


**Incompatible Materials**

No information available for the product.

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

**Component Exposure Limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helium</td>
<td>7440-59-7</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>(See Appendix F: Minimal Oxygen Content )</td>
</tr>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>1 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>Skin - potential significant contribution to overall exposure by the cutaneous route</td>
</tr>
<tr>
<td>NIOSH:</td>
<td>1 ppm TWA ; 3 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>10 ppm STEL ; 30 mg/m3 STEL</td>
</tr>
<tr>
<td></td>
<td>Potential for dermal absorption</td>
</tr>
<tr>
<td></td>
<td>500 ppm IDLH</td>
</tr>
</tbody>
</table>
### Safety Data Sheet

**Material Name:** <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

**SDS ID:** 00244742

**Issue date:** 2019-07-16

**Revision:** 3.0

**Print date:** 2019-07-16

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#### Hydrogen sulfide 7783-06-4

- **ACGIH:** 1 ppm TWA
- 5 ppm STEL
- **NIOSH:** 10 ppm Ceiling 10 min; 15 mg/m3 Ceiling 10 min
- 100 ppm IDLH
- **Europe:** 5 ppm TWA; 7 mg/m3 TWA
- 10 ppm STEL; 14 mg/m3 STEL
- **OSHA (US):** 20 ppm Ceiling
- Mexico: 1 ppm TWA [VLE-PPT]
- 5 ppm STEL [PPT-CT]

#### Carbonyl sulfide 463-58-1

- **ACGIH:** 5 ppm TWA
- Mexico: 5 ppm TWA [VLE-PPT]

---

**ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)**

**Carbon disulfide (75-15-0)**

0.5 mg/g creatinine Medium: urine Time: end of shift Parameter: 2-Thioxothiazolidine-4-carboxylic acid (background, nonspecific)

**Engineering Controls**

Provide local exhaust or process enclosure 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.
Safety Data Sheet

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

SDS ID: 00244742

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>colorless gas</th>
<th>Physical State</th>
<th>gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>Not available</td>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not available</td>
<td>Boiling Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
<td>Freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>Not available</td>
<td>Flash Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>Not available</td>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>Not available</td>
<td>Vapor Pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>Not available</td>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Not available</td>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
<td>Kinematic viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
<td>Density</td>
<td>Not available</td>
</tr>
<tr>
<td>Physical Form</td>
<td>Compressed gas</td>
<td>Taste</td>
<td>tasteless</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Safety Data Sheet

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

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.

Incompatible Materials
No information available for the product.

Hazardous decomposition products
miscellaneous decomposition products

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
nausea, vomiting, difficulty breathing, irregular heartbeat, headache, fatigue, dizziness, disorientation, emotional disturbances, tingling sensation, loss of coordination, suffocation, convulsions, unconsciousness, coma

Skin Contact
frostbite, blisters

Eye Contact
tingling sensation, loss of coordination

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 the following selected endpoints are published:

Carbon disulfide (75-15-0)
Oral LD50 Rat 1200 mg/kg
Inhalation LC50 Rat 25 g/m3 2 h

Hydrogen sulfide (7783-06-4)
Inhalation LC50 Rat 700 mg/m3 4 h

Carbonyl sulfide (463-58-1)
Inhalation LC50 Rat 1070 ppm 4 h

Product Toxicity Data

Acute Toxicity Estimate

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation - Gas</td>
<td>&gt; 20000 ppm</td>
</tr>
<tr>
<td>Oral</td>
<td>&gt; 2000 mg/kg</td>
</tr>
</tbody>
</table>

Immediate Effects
frostbite, suffocation

Delayed Effects
No information on significant adverse effects.

Irritation/Corrosivity Data
No information available for the product.

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.
Component Carcinogenicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Carcinogenicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
</tr>
<tr>
<td>ACGIH</td>
<td>A4 - Not Classifiable as a Human Carcinogen</td>
</tr>
</tbody>
</table>

Germ Cell Mutagenicity
No data available.

Tumorigenic Data
No data available.

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
No target organs identified.

Specific Target Organ Toxicity - Repeated Exposure
No target organs identified.

Aspiration hazard
Not applicable.

Medical Conditions Aggravated by Exposure
No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Aquatic Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50 96 h Poecilia reticulata 3 - 5.8 mg/L [semi-static ]; LC50 96 h Poecilia reticulata 4 mg/L [static ]</td>
</tr>
<tr>
<td>Invertebrate</td>
<td>EC50 48 h Daphnia magna 2.1 mg/L IUCLID</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50 96 h Lepomis macrochirus 0.0448 mg/L [flow-through ]; LC50 96 h Pimephales promelas 0.016 mg/L [flow-through ]</td>
</tr>
</tbody>
</table>

Persistence and Degradability
No data available for the mixture.

Bioaccumulative Potential
No data available for the mixture.

Mobility
No data available for the mixture.

Other Toxicity
No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable regulations.

Component Waste Numbers
Safety Data Sheet

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

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

**Section 14 - TRANSPORT INFORMATION**

**US DOT Information:**
- **Shipping Name:** COMPRESSED GAS, N.O.S., (Contains: Helium.)
- **Hazard Class:** 2.2
- **UN/NA #:** UN1956
- **Required Label(s):** 2.2

**IMDG Information:**
- **Shipping Name:** COMPRESSED GAS, N.O.S., (Contains: Helium.)
- **Hazard Class:** 2.2
- **UN#:** UN1956
- **Required Label(s):** 2.2

**International Bulk Chemical Code**
This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>IBC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
</tr>
<tr>
<td>IBC Code:</td>
<td>Category Y</td>
</tr>
</tbody>
</table>

**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 (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.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
</tr>
<tr>
<td>SARA 302:</td>
<td>10000 lb TPQ</td>
</tr>
<tr>
<td>SARA 313:</td>
<td>1 % de minimis concentration</td>
</tr>
<tr>
<td>CERCLA:</td>
<td>100 lb final RQ ; 45.4 kg final RQ</td>
</tr>
<tr>
<td>SARA 304:</td>
<td>100 lb EPCRA RQ</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
</tr>
<tr>
<td>SARA 302:</td>
<td>500 lb TPQ</td>
</tr>
<tr>
<td>SARA 313:</td>
<td>1 % de minimis concentration</td>
</tr>
<tr>
<td>CERCLA:</td>
<td>100 lb final RQ ; 45.4 kg final RQ</td>
</tr>
<tr>
<td>OSHA (safety):</td>
<td>1500 lb TQ</td>
</tr>
<tr>
<td>SARA 304:</td>
<td>100 lb EPCRA RQ</td>
</tr>
</tbody>
</table>
Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

<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>Helium</td>
<td>7440-59-7</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Carbon disulfide</td>
<td>75-15-0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>7783-06-4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Carbonyl sulfide</td>
<td>463-58-1</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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:

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

WARNING

This product can expose you to chemicals including Carbon disulfide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

<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 disulfide</td>
<td>75-15-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repro/Dev. Tox</td>
<td>development toxicity , 7/1/1989</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>male reproductive toxicity , 7/1/89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>female reproductive toxicity , initial date 7/1/89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Component Analysis - Inventory
Helium (7440-59-7)

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

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

SDS ID: 00244742

Section 16 - OTHER INFORMATION

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

Summary of Changes
New SDS: 02/17/2016

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 -
Safety Data Sheet

Material Name: <0.1% each Carbon disulfide, Hydrogen sulfide, and Carbonyl sulfide in Helium

Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - 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; Sc - 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
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