Safety Data Sheet

Material Name: Halocarbon C318

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
Halocarbon C318

Synonyms
OCTAFLUOROCYCLOBUTANE; MTG MSDS 144; CYCLOOCTAFLUOROBUTANE; PERFLUOROCYCLOBUTANE; FREON C318; REFRIGERANT C318; R C318

Chemical Family
halogenated, alicyclic

Product Use
industrial.

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 - Liquefied gas
Simple Asphyxiant -

GHS Label Elements

Symbol(s)

Signal Word
Warning

Hazard Statement(s)
Safety Data Sheet

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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
May cause frostbite upon sudden release of liquefied gas.

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

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-25-3</td>
<td>HALOCARBON C318</td>
<td>100.0</td>
</tr>
</tbody>
</table>

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**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**
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.

**Most Important Symptoms/Effects**
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Acute
frostbite, suffocation

Delayed
no information on significant adverse effects.

Note to Physicians
For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media
carbon dioxide, regular dry chemical, Large fires: Use regular foam or flood with fine water spray.

Unsuitable Extinguishing Media
None known.

Special Hazards Arising from the Chemical
Negligible fire hazard.

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. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. 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. Apply water from a protected location or from a safe distance. Do not get water directly on material. 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 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
Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Stop leak if possible without personal risk.

Environmental Precautions
Avoid release to the environment.
Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Keep away from heat, sparks and flame. Do not eat, drink, or smoke when using this product. Do not breathe gas, fumes, vapor, or spray. Use only with adequate ventilation. Wear protective gloves and protective clothing. Keep container tightly closed.

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

Incompatible Materials
metals

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures
There are no biological limit values for any of this product's components.

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
Wear splash resistant safety goggles with a faceshield. 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 gloves are not required, but recommended. 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>colorless gas</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
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<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-39 °C (-38 °F)</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition</td>
<td>Not available</td>
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<td>Lower Explosive Limit</td>
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<tr>
<td>Upper Explosive Limit</td>
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<tr>
<td>Vapor Density (air=1)</td>
<td>7.33</td>
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<tr>
<td>Water Solubility</td>
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<tr>
<td>Viscosity</td>
<td>0.012 cp</td>
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<tr>
<td>Density</td>
<td>8.66 g/L at 21 °C</td>
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<tr>
<td>Taste</td>
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<tr>
<td>Molecular Weight</td>
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<tr>
<td>Solvent Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>Solvent</td>
<td>ether</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>-6 °C (21 °F)</td>
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<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
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<tr>
<td>Flash Point</td>
<td>(Not flammable)</td>
</tr>
<tr>
<td>Decomposition</td>
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<tr>
<td>Vapor Pressure</td>
<td>2052 mmHg at 21.1 °C</td>
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<tr>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
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<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
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<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
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<tr>
<td>Physical Form</td>
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<tr>
<td>Molecular Formula</td>
<td>C4-F8</td>
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</table>

### Section 10 - STABILITY AND REACTIVITY

**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.

Incompatible Materials
metals

Hazardous decomposition products
halogenated compounds, Oxides of carbon

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
nausea, vomiting, irregular heartbeat, dizziness, tingling sensation, suffocation, convulsions, coma

Skin Contact
blisters, frostbite

Eye Contact
frostbite, blurred vision

Ingestion
Ingestion of 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

Immediate Effects
frostbite, suffocation

Delayed Effects
no information on significant adverse effects.

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

Respiratory Sensitization
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
Safety Data Sheet

Material Name: Halocarbon C318
SDS ID: 00244290

Reproductive Toxicity
No data available.

Specific Target Organ Toxicity - Single Exposure
No data available.

Specific Target Organ Toxicity - Repeated Exposure
No data available.

Aspiration hazard
Not applicable.

Medical Conditions Aggravated by Exposure
None known.

Additional Data
Stimulants such as epinephrine may induce ventricular fibrillation.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
No LOI 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

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name: Octafluorocyclobutane
Hazard Class: 2.2
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)
Acute Health: Yes Chronic Health: No Fire: No Pressure: Yes Reactivity: 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>
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</thead>
<tbody>
<tr>
<td>HALOCARBON C318</td>
<td>115-25-3</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Not listed under California Proposition 65

Canadian WHMIS Ingredient Disclosure List (IDL)
The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

WHMIS Classification
A.

Component Analysis - Inventory
HALOCARBON C318 (115-25-3)

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

Section 16 - OTHER INFORMATION

NFPA Ratings
Safety Data Sheet

Material Name: Halocarbon C318  
SDS ID: 00244290

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

Summary of Changes
New SDS: 09/09/2015

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; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products 
Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - 
Dangerous Substance Directive; 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; LLV - Level Limit Value; 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; REACH - Registration, Evaluation, 
Authorisation, and restriction of Chemicals; RID - European Rail Transport; 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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