Material Safety Data Sheet

Section 1-Product and Company Identification

Chemical Name: Octafluorocyclobutane
Formula: C_4F_8
Supplier Name: Miragas Co. Ltd.
Address of Supplier: Zhucun Industrial Park, Pengpo, Yichuan, Luoyang, Henan 471311, China
Telephone Number: +86 379-69581176
Emergency Telephone Number: +86 379-69581179
Fax: +86 379-69581180
Email address: Bureau@miragases.com
Recommended Usage： Synthesis of Fluorinated Chemicals, Specialty Chemicals.
Restriction on Use: No Restrictions.

Section 2. Hazards Identification

Physical state: Gas
Emergency Overview: Warning! CONTENTS UNDER PRESSURE. Do not puncture or incinerate container. Contact with rapidly expanding gases can cause frostbite.
Routes of entry: Inhalation

Potential acute health effects
Eyes: No known significant effects or critical hazards.
Skin: No known significant effects or critical hazards.
Inhalation: Acts as a simple asphyxiant.
Ingestion: Ingestion is not a normal route of exposure for gases.

Potential chronic health:
CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
Medical conditions: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
Aggravated by overexposure: See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Octafluorocyclobutane (Halocarbon C-318)	115-25-3	99.999 %	

Section 4. First Aid Measures

No action shall be taken involving any personal risk or without suitable training. If fumes are still suspected to be present, the rescuer should wear an appropriate mask or a self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

EYE CONTACT:
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.
SKIN CONTACT:
In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
FROSTBITE:
Try to warm up the frozen tissues and seek medical attention.
INHALATION:
If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
INGESTION:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Section 5. Fire Fighting Measures

Flammability of the product: Non-flammable.
Products of combustion:
Fire fighting media and instructions: Use an extinguishing agent suitable for surrounding fires. If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area. No specific hazard.
Special protective equipment for fire-fighters:
Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face piece operated in positive pressure mode.

Section 6. Accidental Eelease Measures

Personal precautions: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.
Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 7. Handling and Storage

Handling:
Do not puncture or incinerate container. High pressure gas. Use equipment rated for cylinder pressure. Close

valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure Controls, Personal Protection

Engineering controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal protection

Eyes: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill: A self-contained breathing apparatus should be used to avoid inhalation of the product.

Section 9. Physical and Chemical Properties

Molecular weight: 200.04 g/mole

Molecular formula: C_4-F_8

Boiling/condensation point: -6.04 °C (21.1 °F)

Melting/freezing point: -41.4 °C (-42.5 °F)

Critical temperature: Not available

Vapor density: Not available

Specific Volume (ft3/lb): 2.7933

Gas Density (lb/ft3): 0.358

Section 10. Stability and Reactivity

Stability and reactivity: The product is stable.

Incompatibility with various substances: Highly reactive with alkalis.

Hazardous decomposition products: These products are halogenated compounds, hydrogen fluoride.

Section 11. Toxicological Information

Other toxic effects on humans: No specific information is available in our database regarding the other toxic

effects of this material for humans.

Specific Effects
Carcinogenic effects: No known significant effects or critical hazards.
Mutagenic effects: No known significant effects or critical hazards.
Reproduction toxicity: No known significant effects or critical hazards.

Section 12. Ecological Information

Products of degradation
Toxicity of the products of biodegradation: The product itself and its products of degradation are not toxic.
Environmental fate: Not available.
Environmental hazards: No known significant effects or critical hazards.
Toxicity to the environment: Not available.

Section 13. Disposal Considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

Section 14. Transport Information

DOT/IMO SHIPPING NAME: OCTAFLUOROCYCLOBUTANE
HAZARD CLASS: 2.2
IDENTIFICATION NUMBER: UN 1976
PRODUCT RQ: None
SHIPPING LABEL(s): NON-FLAMMABLE GAS
PLACARD (when required): NON-FLAMMABLE GAS

Section 15. Regulatory Information

United States
U.S. Federal regulations: TSCA 8(b) inventory: octafluorocyclobutane
SARA 302/304/311/312 extremely hazardous Substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: octafluorocyclobutane
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Octafluorocyclobutane: Sudden Release of Pressure, Delayed (Chronic) Health Hazard
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean air act (CAA) 112 accidental release prevention: No products were found.
Clean air act (CAA) 112 regulated flammable substances: No products were found.
Clean air act (CAA) 112 regulated toxic substances: No products were found
State regulations: New Jersey: octafluorocyclobutane

Canada
WHMIS (Canada): Class A: Compressed gas.
CEPA DSL: octafluorocyclobutane

Section 16. Other Information

United States
Label Requirements: CONTENTS UNDER PRESSURE

Canada
Label Requirements: Class A: Compressed gas.

NOTES: Revisions are routinely updated every three years or on necessary.