

Air Liquide New Zealand Limited
19 Maurice Road
Penrose
Auckland 1061

Phone: (09) 622 3880
Fax: (09) 622 3881
Emergency: 0800 156 516

MATERIAL SAFETY DATA SHEET

Product Name:

PERFLUOROPROPANE,
Liquefied (C₃F₈)

Issued: September 2009

Revision: 0

Page: 1 of 7



IDENTIFICATION

Chemical Name: Octafluoropropane
Synonyms: Freon 218; R218, RC 218; PFC 218
UN. Number: 2424

Use: Used in semi-conductor applications and R218 is a component in refrigeration mixtures.

HAZARDS IDENTIFICATION

Dangerous Goods Class and Subsidiary Risk: 2.2
HSNO Classification: Not Hazardous

Hazard Statement: Contains gas under pressure; may explode if heated.

Precautionary Statements: Read label before use.
Read Safety Data Sheet before use.
Protect from sunlight and heat.
Store in a well-ventilated place.
Product is a simple asphyxiant.
Wear protective gloves and eye protection.

COMPOSITION

Ingredients	CAS Number	Proportion
Chemical Entity Octafluoropropane	76-19-7	100%

Contains no other components or impurities that will influence the classification of the product.

FIRST AID MEASURES**Health Effects****Acute**

Swallowed: Not applicable to gases

Eye: Not irritating to the eye

Skin: Not irritating to the skin

Inhaled: Perfluoropropane is non-toxic at normal temperature and pressure. By diluting the oxygen concentration in air below the level necessary to support life, it can act as an asphyxiant. Effects of oxygen deficiency are:

- 16%: breathing and pulse rate increased, impaired thinking and attention, reduced coordination;
- 14%: Abnormal fatigue upon exertion, emotional upset, faulty coordination, poor judgement;
- 12.5%: Very poor judgement and coordination, impaired respiration that can cause permanent hear damage, nausea and vomiting;
- below 10%: Inability to perform various movements, loss of consciousness, convulsions, and death.

Chronic

Long term exposure to perfluoropropane has no known health effects. Prolonged exposure to an oxygen deficient atmosphere (below 19% oxygen in air) may affect the heart and nervous system.

First AidInhalation:

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Remove victim to uncontaminated area whilst wearing self contained breathing apparatus. Victim may not be aware of asphyxiation. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination.

Advice to Doctor

Advise doctor that victim has been exposed to an oxygen deficient atmosphere.

In case of liquid exiting cylinder:Skin Contact

Liquid perfluoropropane can cause severe cold burn upon contact with skin.

- In case of cold burn move the victim to a warm place (about 22°C) but do not apply direct heat. Never use dry heat.
- Do not rub frozen parts, as tissue damage may result.
- Gently, flush the affected areas of the skin with large quantities of unheated tap water. Do not use hot water or any other form of direct heat.
- The skin should gradually change colour, via blue, back to pink.
- Loosen any clothing that might restrict the circulation to the affected area but take care not to remove any clothing frozen to flesh.
- Apply DRY, sterile, non-adhering dressing with a large bulky protective covering to protect the wounds
- Do not apply dry sterile dressing too tightly in case it restricts blood circulation. Keep the affected body part at rest. It will become swollen, painful and prone to infection when thawed.
- Treat the person for shock.
- Do not give person alcohol to drink or tobacco to smoke. Both will restrict blood flow to the wound and retard recovery.
- Obtain medical assistance immediately.

General:

Rescuers should not enter an oxygen deficient atmosphere without using self-contained full face positive pressure breathing equipment.

FIRE FIGHTING MEASURES**Flammability:**

Non Flammable.

Fire/Explosion Hazard:

Non-flammable, however if involved in a fire the following toxic and or corrosive fumes may be produced by thermal decomposition: carbon monoxide, hydrogen fluoride and carbonyl fluoride.

Exposure to fire may cause container to rupture/explode. Cylinders involved in a fire/explosion may rocket. Move cylinders from vicinity of fire if safe to do so. Cool cylinders by spraying flooding quantities of water from a protected location. If unable to keep cylinders cool, evacuate area, minimum distance 200 meters.

Extinguishing Media:

Use appropriate media to extinguish source of surrounding fire. Cool cylinders with water if possible.

Hazchem Code:

2 T E

Recommended Protective Clothing:

In confined space use self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES**Personal Protection:**

Personnel engaged in the movement of cylinders shall be provided with safety footwear, safety glasses and leather or PVC gloves. Full cover overalls are recommended. In areas where equipment failure may cause an immediate high concentration of perfluoropropane, ensure adequate ventilation and have approved self-contained, full face respiratory equipment readily available for emergencies.

Spills and Disposal:

Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Reference Guide:

Standard SNZ HB 76:2008 Dangerous Goods – Initial Emergency Response Guide.

AS/NZS 1337 – Eye Protection for Industrial Applications

AS/NZS 2161.1 – Occupational Protective Gloves – Selection, use and maintenance

AS/NZS 1715 – Selection, Use and Maintenance of Respiratory Protective Devices

AS/NZS 1716 – Respiratory Protective Devices

General:

Only experienced and properly instructed personnel should handle compressed gases. Cylinder contents and identification labels provided by the supplier must not be removed or defaced. Colour coding should not be the only criterion used for content identification.

HANDLING AND STORAGE

Handling

Flammability:

Non Flammable.

General:

Only experienced and properly instructed personnel should handle compressed gases. Cylinder contents and identification labels provided by the supplier must not be removed or defaced. Colour coding should not be the only criterion used for content identification.

Approved Handlers:

Approved handlers are not required, non hazardous gas (HSNO).

Storage:

Storage of compressed gas cylinders shall be in compliance with New Zealand HSNO Regulations.

Cylinders will be kept away from ignition sources (including static discharges).

Cylinders shall be stored in a cool, dry, well ventilated area out of direct sunlight and away from heat and ignition sources.

No part of cylinders shall be exposed to temperatures above 50°C.

Cylinders shall be stored upright on a level, fireproof floor, secured in position, and protected from damage.

Full cylinders shall be stored separately from empties.

Cylinders should be moved by hand-truck or cart designed for that purpose.

Separation:

Avoid any contact with oil or grease particularly to the cylinder valve.

Perfluoropropane can be stored with most common substances.

Spills and Disposal:

Ventilate area. Stop leak if it can be done without risk. Allow gas to dissipate to atmosphere. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards:

Perfluoropropane is a simple asphyxiant. Ensure adequate ventilation.

Engineering Controls:

Do not allow backfeed into the cylinder.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

Provide adequate local exhaust and dilution (general) ventilation and supply sufficient replacement air to maintain oxygen concentration above 19%.

Personal Protection:

Personnel engaged in the movement of cylinders shall be provided with safety footwear, safety glasses and leather or PVC gloves. Full cover overalls are recommended. In areas where equipment failure may cause an immediate high concentration of perfluoropropane, ensure adequate ventilation and have approved self-contained, full face respiratory equipment readily available for emergencies.

Reference Guide:

AS/NZS 1337 – Eye Protection for Industrial Applications

AS/NZS 2161.1 – Occupational Protective Gloves – Selection, use and maintenance

AS/NZS 1715 – Selection, Use and Maintenance of Respiratory Protective Devices

AS/NZS 1716 – Respiratory Protective Devices

PHYSICAL AND CHEMICAL PROPERTIES**Physical Properties**

Appearance:	Colourless, faintly sweet odour	Flashpoint:	Non Flammable
Boiling Point:	-36.7°C	Flammability Limits:	Non Flammable

Other Properties

Relative Density (at 15°C) (Air = 1):	6.683	Density of Gas (101.3 kPa, 15°C):	8.17 kg/m ³
Molecular Weight:	188.02	Critical Temperature:	71.9°C

STABILITY AND REACTIVITY**Flammability:**

Non-flammable, however if involved in a fire the following toxic and or corrosive fumes may be produced by thermal decomposition: carbon monoxide, hydrogen fluoride and carbonyl fluoride.

Materials Compatibility:

Perfluoropropane is compatible with most common metals and plastics, however there is swelling involved with Polychlorotrifluoroethylene (PCTFE).

TOXICOLOGY INFORMATION

No known toxicological effects from this product.

ECOLOGICAL INFORMATION

No known ecological damage caused by this product

DISPOSAL CONSIDERATIONS

Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well ventilated place.

TRANSPORT INFORMATION

UN Number:	2424
Proper Shipping Name:	PERFLUOROPROPANE, COMPRESSED
Dangerous Goods Class and Subsidiary Risk:	2.2
Packing Group:	Not applicable
Hazchem Code:	2 T E

Other Information: Avoid transport on vehicles where the load is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:

- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

REGULATORY INFORMATION

ERMA Register Approval No: HSR001028

HSNO Controls: Hazardous Substances (Compressed Gases) Regulations 2004.
Hazardous Substances (Tank Wagon and Transportable Containers) Regulations 2004.

Approved Handlers: Approved handlers are not required, non hazardous gas (HSNO).

OTHER INFORMATION

Compressed Perfluoropropane is supplied in high pressure cylinders.

Cylinder Valve Outlet: No connection assigned AS2473.2

- References:
- . L'Air Liquide Gas Encyclopaedia - Elsevier Scientific Publishing Co. Amsterdam
 - . NZS 5433:2007 Transport of Dangerous Goods on Land
 - . ERMA Website – Approvals Register – www.erma.govt.nz
 - . SNZ HB76:2008 Dangerous Goods – Initial Emergency Response Guide
 - . Air Liquide Group MSDS – Perfluoropropane AL003A Rev. 1
 - . AS1678 2C1 Emergency Procedure Guide – Transport – Non-Flammable, Compressed Gas
 - . AS 4484-2004 - Gas Cylinders for Industrial, Scientific, medical and refrigerant use - labelling and colour coding
 - . AS 2473.2-2007 - Valves for compressed gas outlets - Part 2 Outlet connections (threaded) and stem (inlet) threads
 - . Air Liquide New Zealand Document - DOPM-Z-TECH-0060 Cylinder Reference Manual for Cylinder Identification
 - . CGA Safety bulletin SB2-2007 Oxygen Deficiency
 - . Operators Handbook for the Transport of Dangerous Goods by Road – NZ Road Transport & Logistics Industry Training Organisation
 - . ALNZ - Transport of Gas cylinders in Non-Dedicated Vehicles Customer Information Guide
 - . NZCIC Code of Practice – Preparation of Safety Data Sheets

END MSDS

This MSDS summarises to our best knowledge, at the date of issue, the health and safety hazard information regarding this product and general guidance on how to safely handle the product in the workplace. All due care has been taken to include accurate and up-to-date information in this MSDS.

Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact Air Liquide New Zealand.

As far as lawfully possible, no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this MSDS can be accepted.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is available on request.

This MSDS has been prepared in accordance with NZCIC Code of Practice – Preparation of Safety Data Sheets.

This MSDS is subject to change without notice. For the latest version of this MSDS visit <http://www.airliquide.com.au/en/technical/new-zealand-msds.html>

Air Liquide regional offices contact details on following page

Regional Offices**Auckland**

PO Box 12846
19 Maurice Road
Penrose
Phone: 09 622 3888
Fax: 09 622 3882

Hamilton

PO Box 10 394
2 Tawn Place
Pukete
Phone: 07 849 2969
Fax: 07 849 2968

Mt Maunganui

Unit 4, 12 – 18 Aerodrome Road
Mt Maunganui
Phone: 07 574 8475
Fax: 07 574 8476

Palmerston North

PO Box 10 010
5 Connolly Place
Palmerston North
Phone: 06 355 5216
Fax: 06 354 7104

Wellington

PO Box 36 092
205 Gracefield Road
Seaview
Phone: 04 568 6142
Fax: 04 568 6141

Christchurch

PO Box 16453
7 Canterbury St
Hornby
Phone: 03 344 6033
Fax: 03 344 6031

**Emergency 24hr Phone
Number 0800 156 516**