

SAFETY DATA SHEET

Item Code: L0126

Section 1. Identification of the material and the supplier

Item Code: L0126
 Product: Du-Pont –Isceon M049 Plus(R-437A) refrigerant
 Product Use: Refrigerant Gas

New Zealand Supplier: Realcold Ltd
 Address: 9 Prescott Street
 Penrose, Auckland

Telephone: 09 526 5700

Fax Number: 09 526 5721

Emergency Telephone: 09 526 5700
0800 766 764 (National Poison Centre)

Manufacturer: Du Pont
 7 Eden Park Drive
 Macquarie Park NSW 2113
 Australia

Date of MSDS Preparation: 14 March 2017 - ver 2

Section 2. Hazards Identification

This substance has been determined by the manufacturer to be not hazardous according to the HSNO (Minimum Degrees of Hazard) Regulations 2001

This substance is classified as a dangerous good according to NZS5433: 2007 & the ADG Code

Section 3. Composition / Information on Ingredients

| Ingredients | Wt% | CAS NUMBER. |
|---------------------------|------|-------------|
| 1,1,1,2-Tetrafluoroethane | 78.5 | 811-97-2 |
| Pentafluoroethane | 19.5 | 354-33-6 |
| Butane | 1.4 | 106-97-8 |
| Pentane | 0.6 | 109-66-0 |

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

If on Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Take off all contaminated clothing immediately. Consult a physician. Wash contaminated clothing before re-use. Treat for frostbite if necessary by gently warming affected area.

If Swallowed Is not considered a potential route of exposure.

If Inhaled Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. Get medical advice if breathing becomes difficult.

Notes to physician : Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

Section 5. Fire Fighting Measures

| | |
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| Hazard Type | Combustible in presence of ignition source when under pressure or elevated temperatures. |
| Hazards from decomposition products | Cylinders are equipped with pressure and temperature relief devices, but may still rupture under fire conditions. Decomposition may occur. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and colour of the torch flame. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames. This substance is not flammable in air at temperatures up to 100 deg. C at atmospheric pressure. However, mixtures of this substance with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). Whether a mixture containing this substance and air, or this substance in an oxygen enriched atmosphere become combustible depends on the inter-relationship of 1) the temperature 2) the pressure, and 3) the proportion of oxygen in the mixture. In general, this substance should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example this substance should NOT be mixed with air under pressure for leak testing or other purposes. Experimental data have also been reported which indicate combustibility of this substance in the presence of certain concentrations of chlorine. |
| Suitable Extinguishing media | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. |
| Precautions for firefighters and special protective clothing | In the event of fire, wear self-contained breathing apparatus. Wear neoprene gloves during cleaning up work after a fire. NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up. |
| HAZCHEM CODE | 2TE |

Section 6. Accidental Release Measures

Spill Cleanup: Ventilate area using forced ventilation, especially low or enclosed Places where heavy vapors might collect. Recover free liquid for reuse or reclamation.

Accidental Release Measures : Prevent material from entering sewers, waterways, or low areas. Avoid open flames and high temperatures. Self-contained breathing apparatus (SCBA) is required if a large release occurs.

Section 7. Handling and Storage

Handling Avoid breathing vapours or mist. Avoid contact with skin, eyes and clothing. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8. Handle in accordance with good industrial hygiene and safety practice.

Storage Valve protection caps and valve cutlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Never attempt to lift cylinder by its cap. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers.
Keep at temperature not exceeding 52°C.
Do not store near combustible materials. Keep container tightly closed in a dry and well-ventilated place. Store in original container. Protect from contamination.

Storage temperature < 52 °C

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

| Substance | CAS # | TWA | | STEL | |
|---------------------------|----------|-----|-------------------------------|------|-------------------|
| | | ppm | mg/m ³ | ppm | mg/m ³ |
| 1,1,1,2-Tetrafluoroethane | 811-97-2 | | 1000ppm | | |
| Pentafluoroethane | 354-33-6 | | 1000ppm | | |
| Butane | 106-97-8 | | 800ppm, 1900mg/m ³ | | |

Workplace Exposure Standard – Time Weighted Average (WES-TWA). *The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure.* Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). *The 15-minute average exposure standard.* Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply.

Engineering Controls Ensure adequate ventilation, especially in confined areas. Local exhaust should be used when large amounts are released

Personal protective equipment

Respiratory protection :

For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Hand protection :

Additional protection: Impervious gloves

Eye protection :

Wear safety glasses or coverall chemical splash goggles. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Protective measures :

Self-contained breathing apparatus (SCBA) is required if a large release

Section 9 Physical and Chemical Properties

| | |
|------------------------------|-------------------------------------|
| Appearance | Liquified Gas |
| Colour | Colourless, clear |
| Odour | slight, ether like |
| Flash Point | None available |
| Boiling Point | -32.3 °C |
| Density (as a liquid) | 1.178 g/cm ³ at 25 °C |
| Vapour Pressure | 7,949 hPa at 25 °C |
| Vapour Density | 3.7 at 25°C and 1,013 hPa (Air=1.0) |
| PH | Neutral |
| Specific Gravity | 1.18 at 25 °C |

Section 10. Stability and Reactivity

| | |
|---|---|
| Stability of Substance | Stable under recommended storage conditions. |
| Conditions to Avoid | The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen, the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions. |
| Incompatible Materials | Alkali metals Alkaline earth metals, Powdered metals, powdered metal salts |
| Hazardous Decomposition Products | Hazardous thermal decomposition products:: Carbon oxides, Hydrogen fluoride, Carbonyl fluoride |

Section 11 Toxicological Information**1,1,1,2-Tetrafluoroethane (HFC-134a) Cas No – 811-97-2**

Inhalation 4 h LC50 : 567000 ppm , rat

Pentafluoroethane (HFC-125) Cas No- 354-33-6

Inhalation 4 h LC50 : > 800000 ppm , rat

Butane Cas No: 106-97-8

Inhalation 4 h LC50 : 277018 ppm , rat

Irritating to respiratory system.

Narcosis

Pentane Cas No: 109-66-0

Oral LD50 : > 2,000 mg/kg , rat (not applicable)

70000 ppm , mouse

Irritating to respiratory system.

Narcosis

Emergency Overview

Misuse or intentional inhalation abuse may lead to death without warning. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite.

Potential Health Effects

Skin : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Eyes : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Inhalation : Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects. Other symptoms potentially related to misuse or inhalation abuse are: Anaesthetic effects, Light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Irritating to respiratory system. May cause:, Cough, sneezing, runny nose, sore throat, or shortness of breath. Vapours may cause drowsiness and dizziness. May cause:, narcosis, Central nervous system depression.

Ingestion:

Pentane: Harmful: may cause lung damage if swallowed. Repeated exposure

Butane: Adverse effects from repeated inhalation may include: Altered respiratory rate

Pentane: Adverse effects from repeated ingestion may include: Kidney effects

Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

Section 12. Ecotoxicological Information

Aquatic Toxicity

1,1,1,2-Tetrafluoroethane (HFC-134a)

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 450 mg/l

72 h EC50 : Algae > 118 mg/l

Information given is based on data obtained from similar substances.

48 h EC50 : Daphnia magna (Water flea) 980 mg/l

Pentafluoroethane (HFC-125)

96 h LC50: Oncorhynchus mykiss (rainbow trout) > 81.8 mg/l

Information given is based on data obtained from similar substances.

96 h LC50: Danio rerio (zebra fish) > 200 mg/l

Information given is based on data obtained from similar substances.

96 h LC50: Oncorhynchus mykiss (rainbow trout) 450 mg/l

Information given is based on data obtained from similar substances.

72 h EC50 :Pseudokirchneriella subcapitata (green algae) > 118 mg/l

Information given is based on data obtained from similar substances.

72 h EC50 :Pseudokirchneriella subcapitata (green algae) > 114 mg/l

Information given is based on data obtained from similar substances.

96 h EC50 :Algae 142 mg/l

Information given is based on data obtained from similar substances.

48 h EC50: Daphnia magna (Water flea) > 200 mg/l

Information given is based on data obtained from similar substances.

48 h EC50: Daphnia magna (Water flea) > 97.9 mg/l

Information given is based on data obtained from similar substances.

Butane

96 h LC50: Fish (unspecified species) > 1,000 mg/l

Pentane

48 h EC50: Daphnia magna (Water flea) 9.74 mg/l

Section 13. Disposal Considerations

Can be used after re-conditioning. Recover by distillation or remove to a permitted waste disposal facility. Comply with Local Regulations.

Environmental Hazards : Empty pressure vessels should be returned to the supplier.

Section 14 Transport Information

Classified as a Dangerous Good for transport

Road and Rail Transport (in NZ ; NZS 5433:2007)

| | |
|-----------------------|---|
| UN No: | 1078 |
| Class-primary | 2.2 |
| Packing Class: | None allocated |
| Proper Shipping Name: | Refrigerant gas, n.o.s. (1,1,1,2-Tetrafluoroethane) Pentafluoroethane) |

Air Transport

| | |
|-----------------------|---|
| UN No: | 1078 |
| Class-primary | 2.2 |
| Packing Class: | None allocated |
| Proper Shipping Name: | Refrigerant gas, n.o.s. (1,1,1,2-Tetrafluoroethane) Pentafluoroethane) |

Marine Transport

| | |
|-----------------------|---|
| UN No: | 1078 |
| Class-primary | 2.2 |
| Packing Class | None allocated |
| Proper Shipping Name: | Refrigerant gas, n.o.s. (1,1,1,2-Tetrafluoroethane) Pentafluoroethane) |
| Marine Pollutant | No |

Section 15 Regulatory Information

This substance is not hazardous according to the *HSNO (Minimum Degrees of Hazard) Regulations 2001 & NOHSC*

Management of this product must comply with the HSNO (Compresses Gases) Regulations 2004

Section 16 Other Information

1. HSNO Approved Code of Practice: Preparation of Safety Data Sheets, September 2006.

Disclaimer

This document has been issued by Realcold Limited and serves as their Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to Realcold Limited or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from

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