Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **R410A**

Recommended Use of the Chemical and Restrictions on Use Refrigerant.

Supplier: Ixom Operations Pty Ltd
ABN: 51 600 546 512
Street Address: Level 8, 1 Nicholson Street
East Melbourne Victoria 3002
Australia

Telephone Number: +61 3 9906 3000
Emergency Telephone: **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

Classification of the chemical:
Gases under pressure - Liquefied Gas

SIGNAL WORD: WARNING

Hazard Statement(s):
H280 Contains gas under pressure; may explode if heated.

Precautionary Statement(s):

Prevention:
No prevention statements.

Response:
No response statements.

Storage:
P410+P403 Protect from sunlight. Store in a well-ventilated place.

Disposal:
No disposal statements.

Poisons Schedule (SUSMP): None allocated.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Difluoromethane	75-10-5	30-60%	H220 H280
Pentafluoroethane	354-33-6	30-60%	H280

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Skin Contact:
For freeze burns, immediately flood burnt area with large amounts of luke-warm water and cover with a clean, dry dressing. Do not use hot water. Seek immediate medical assistance.

Eye Contact:
If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.

Ingestion:
Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

Indication of immediate medical attention and special treatment needed:
Treat symptomatically. This material may make the heart more susceptible to arrhythmias. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Water fog (or if unavailable fine water spray).

Hazchem or Emergency Action Code: 2TE

Specific hazards arising from the chemical:
Containers may rupture or explode in heat of fire. R410A is not flammable at temperatures up to 100°C at atmospheric pressure. However, mixtures of R410A with high concentrations of air at elevated pressure can become combustible at ambient temperature. As the temperature of the mixture is increased, lower pressure, but still greater than atmospheric pressure, can create the same effect. Therefore, R410A should not be mixed with air under pressure for leak testing or other purposes. In general, R410A should not be used or allowed to exist with high concentrations of air above atmospheric pressure.

Special protective equipment and precautions for fire-fighters:
Decomposes on heating emitting toxic fumes, including those of hydrofluoric acid , oxides of carbon , hydrocarbons . Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Shut off all possible sources of ignition. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
SMALL SPILLS: If safe to do so, isolate the leak. Small spills are allowed to evaporate provided there is adequate ventilation. LARGE SPILLS: Avoid breathing in vapours. Work up wind or increase ventilation. Wear protective equipment to prevent skin and eye contact and breathing in vapours/dust. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material).

7. HANDLING AND STORAGE

Precautions for safe handling:
Avoid skin and eye contact and breathing in vapour. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

Conditions for safe storage, including any incompatibilities:
Store cyclinders upright, prevented from falling in a secure area and away from combustible material. Store below 45 °C in a dry, well ventilated area constructed of non-combustible material with a firm level floor (preferably concrete), away from heavy traffic and emergency exits. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters: No value assigned for this specific material by Safe Work Australia. However, supplier recommended Workplace Exposure Standard(s):
8 hr TWA = 1000 ppm (Difluoromethane)
8 hr TWA = 1000 ppm, 4900 mg/m^3 (Pentafluoroethane)

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES.

Wear overalls, chemical goggles and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.
If determined by a risk assessment an inhalation risk exists, wear an organic vapour respirator or an air-supplied respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquefied gas
Colour:	Colourless
Odour:	Ether -like
Specific Gravity:	1.11 @15°C
Relative Vapour Density (air=1):	2.3
Vapour Pressure (20 °C):	12.46 bar @15°C
Flash Point (°C):	Not applicable
Flammability Limits (%):	Not applicable
Autoignition Temperature (°C):	Not available
Solubility in water (g/L):	0.43 (pentafluoroethane, 25°C)
Boiling Point/Range (°C):	-52.7
pH:	7
Viscosity:	0.15 mPa.s (liquid, 25°C)

10. STABILITY AND REACTIVITY

Reactivity:	No information available.
Chemical stability:	Stable if stored and handled under recommended conditions.
Possibility of hazardous reactions:	Hazardous polymerisation will not occur.
Conditions to avoid:	Do not heat above 52°C. Avoid exposure to heat, sources of ignition, and open flame. Avoid exposure to direct sunlight.
Incompatible materials:	Incompatible with alkalis , alkaline earth metals , active metals , powdered aluminium , zinc , beryllium .
Hazardous decomposition products:	Hydrofluoric acid. Oxides of carbon. Hydrocarbons. Halogens. Halogen acids. Carbonyl halides.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Not a likely route of exposure, however, swallowing liquid will result in freeze burns of the mouth, throat and stomach.

Eye contact: Liquid splashes or spray may cause freeze burns to the eye.

Skin contact: Liquid splashes or spray may cause freeze burns.

Inhalation: Breathing in high concentrations can produce central nervous system depression, which can lead to loss of co-ordination, impaired judgement and if exposure is prolonged, unconsciousness. Breathing in high concentrations may result in an irregular heart beat and prove suddenly fatal.

Acute toxicity:
Inhalation LC50 (rat): >1107000 mg/m^3 (difluoromethane)

Respiratory or skin sensitisation: No information available.

Chronic effects:

Mutagenicity: No evidence of mutagenic effects.
Carcinogenicity: No component contained in this material is listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
Reproductive toxicity: Does not impair fertility.
Specific Target Organ Toxicity (STOT) - single exposure: No information available.
Specific Target Organ Toxicity (STOT) - repeated exposure: No information available.
Aspiration hazard: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Avoid contaminating waterways.

Persistence/degradability: Global warming has been predicted as a potential consequence of the emission of this product.

Bioaccumulative potential: This product shows a low bioaccumulation potential.

Mobility in soil: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to Waste Management Authority. Dispose of contents and container in accordance with local, regional, national, international regulations.

14. TRANSPORT INFORMATION

Road and Rail Transport
Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

UN No:	3163
Transport Hazard Class:	2.2 Non-Flammable Non-Toxic Gas
Proper Shipping Name or Technical Name:	LIQUEFIED GAS, N.O.S. (DIFLUOROMETHANE, PENTAFLUOROETHANE)
Hazchem or Emergency Action Code:	2TE

Marine Transport
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

UN No:	3163
Transport Hazard Class:	2.2 Non-Flammable Non-Toxic Gas
Proper Shipping Name or Technical Name:	LIQUEFIED GAS, N.O.S. (DIFLUOROMETHANE, PENTAFLUOROETHANE)
IMDG EMS Fire:	F-C
IMDG EMS Spill:	S-V

Air Transport
Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS. TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in Passenger and Cargo Aircraft; may be transported by Cargo Aircraft Only.

UN No:	3163
Transport Hazard Class:	2.2 Non-Flammable Non-Toxic Gas
Proper Shipping Name or Technical Name:	LIQUEFIED GAS, N.O.S. (DIFLUOROMETHANE, PENTAFLUOROETHANE)

15. REGULATORY INFORMATION

Classification:
This material is hazardous according to Safe Work Australia; HAZARDOUS CHEMICAL.

Classification of the chemical:
Gases under pressure - Liquefied Gas

Hazard Statement(s):
H280 Contains gas under pressure; may explode if heated.

Poisons Schedule (SUSMP): None allocated.

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

Supplier Safety Data Sheet; 03/ 2017.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
5 Yearly Revised Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.