

SAFETY DATA SHEET

According to
HSNO Hazardous Substances (Safety Data Sheets) Notice 2017

Section 1. Identification of the material and the supplier

Product: **R-417A**
 Product Use: Refrigerant Gas
 Restriction of Use: Refer to Section 15

New Zealand Supplier: **Refrigeration Specialties Ltd**
 Address: 181a Station Road,
 Penrose,
 Auckland 1061

Telephone: +64 9 582 0200
Emergency No: 0800 764 766 (National Poison Centre)

Date of SDS Preparation: 4 March 2024

Section 2. Hazards Identification

This substance NOT is hazardous according to the EPA Hazardous Substances (Classification) Notice 2020

Pictograms



Signal Word: **Warning**

GHS Classification and Category	Hazard Code	Hazard Statement
Liquefied Gas	H280	Contains gas under pressure may explode if heated.

Prevention Code	Prevention Statement
P103	Read carefully and follow all instructions.

Response Code	Response Statement
None allocated	

Storage Code	Storage Statement
P403	Store in a well-ventilated place.

Disposal Code	Disposal Statement
P501	Dispose of according to Local Regulations or Authorities

EMERGENCY OVERVIEW: Colourless, volatile liquid with ethereal and faint sweetish odour. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapours displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

Section 3. Composition / Information on Hazardous Ingredients

Ingredients	Wt%	CAS NUMBER.
Butane (HC 600)	2-4	106-97-8
Pentafluoroethane (HFC-125)	45-50	354-33-6
1,1,1,2-Tetrafluoroethane (HFC-134a)	50	811-97-2

Section 4. First Aid Measures

Routes of Exposure:

If in Eyes	Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.
If on Skin	Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.
If Swallowed	Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.
If Inhaled	Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).

Most important symptoms and effects, both acute and delayed

Symptoms:

Swallowed:	Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.
Inhalation:	R-417A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12- 14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.
Skin:	Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.
Eye:	Liquid contact can cause severe irritation and frostbite. Mist may irritate.

Notes to Doctor:	Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.
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Section 5. Fire Fighting Measures

Hazard Type	Non Flammable
Hazards from combustion products	R-417A is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

Suitable Extinguishing media	Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)
Precautions for firefighters and special protective clothing	Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.
HAZCHEM CODE	2TE

Section 6. Accidental Release Measures

Always wear recommended personal protective equipment as detailed in Section 8. Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

Section 7. Handling and Storage

Precautions for Handling:

- Always wear recommended personal protective equipment.
- Read carefully and follow all instructions.
- Avoid breathing vapours and liquid contact with eyes, skin or clothing.
- Do not puncture or drop cylinders, expose them to open flame or excessive heat.
- Use authorized cylinders only.
- Follow standard safety precautions for handling and use of compressed gas cylinders.
- R-417A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

Precautions for Storage:

- Store away from potassium, calcium, powdered aluminium, magnesium, and zinc.
- Freshly abraded Aluminium surfaces at specific temperatures and pressures may cause a strong exothermic reaction.
- Store in a cool, well-ventilated area of low fire risk and out of direct sunlight.
- Protect cylinder and its fittings from physical damage.
- Storage in subsurface locations should be avoided.
- Close valve tightly after use and when empty.

Section 8 Exposure Controls / Personal Protection

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance		TWA		STEL	
		ppm	mg/m ³	ppm	mg/m ³
Butane	[106-97-8]	800	1900	-	-
1,1,1,2-Tetrafluoroethane (HCF 134a)	[811-97-2]	1000	4200	-	-

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5 ppm TLV-TWA

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. Workplace Exposure Standards and Biological Exposure Indices NOV 2023 14TH EDITION.

Engineering Controls

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical

(general) ventilation may be adequate for other operating and storage areas.

Personal Protection Equipment



Eyes	For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.
Skin	Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.
Respiratory	None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved gas mask with organic vapor canister.
Additional Recommendations	Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick drench shower facilities at convenient locations.

Section 9 Physical and Chemical Properties

Appearance	Gas at ambient temperatures
Colour	Clear, colorless liquid and vapor
Odour	Faint ethereal odor
Odour Threshold	Not available
pH	Neutral
Boiling Point	-39.1°C
Melting Point	Not available
Freezing Point	Not available
Flash Point	Not available
Flammability	Not flammable
Upper and Lower Explosive Limits	Not available
Vapour Pressure	156.2 psia @ 21°C 356.7 psia @ 54°C
Vapour Density (air=1)	3
Relative Density	1.16g/cm ³ at 21.1°C
Water Solubility	Not available
Partition Coefficient:	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	>250°C
Kinematic Viscosity	Not available
Particle Characteristics	Not available
Evaporation Rate	>1 COMPARED TO: CCl ₄ = 1
% Volatiles	100

Section 10. Stability and Reactivity

Stability of Substance	This product is stable under normal conditions.
Possibility of hazardous reactions	Not available

Conditions to Avoid	Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.
Incompatible Materials	(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminium surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminium, magnesium, and zinc.
Hazardous Decomposition Products	Halogens, halogen acids and possibly carbonyl halides.

Section 11 Toxicological Information

Acute Effects:

Swallowed	This product is not classified as acutely toxic.
Dermal	This product is not classified as acutely toxic.
Inhalation	R-417A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12- 14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.
Eye	Liquid contact can cause severe irritation and frostbite. Mist may irritate.
Skin	Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

Chronic Effects:

Carcinogenicity	This product is not classified as carcinogenic.
Reproductive Toxicity	This product is not classified as toxic for reproduction.
Germ Cell Mutagenicity	This product is not classified as mutagenic.
Aspiration	This product is not classified as Asp Tox.
STOT/SE	This product is not classified as STOT SE.
STOT/RE	This product is not classified as STOT RE.

IMMEDIATE (ACUTE) EFFECTS:

HFC-125:

LC50 : Inhalation 4 hr. (rat) - > 800,000 ppm / Cardiac Sensitization threshold (dog) 75,000 ppm

HFC-134a:

LC50 : Inhalation 4hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) > 80,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

HFC-125:

Teratogenic NOEL (rat and rabbit) – 50,000 ppm Subchronic inhalation (rat) NOEL - > 50,000 ppm / Chronic NOEL – 10,000 ppm

HFC-134a:

Teratogenic NOEL (rat and rabbit) – 40,000 ppm Subchronic inhalation (rat) NOEL – 50,000 ppm / Chronic NOEL – 10,000 ppm

Section 12. Ecotoxicological Information

Not expected to be harmful to the environment

Product:	
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Persistence and degradability	R-417A is a gas at room temperature; therefore, it is unlikely to remain in water.
Bioaccumulation	No data available
Mobility in Soil	No data available
Other adverse effects	No data available

Section 13. Disposal Considerations

Disposal Method:

Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.

Precautions or methods to avoid: Do not pierce or burn, even if empty.

Section 14 Transport Information

This product is classified as a Dangerous Good for transport in NZ ; NZS 5433:2020 and SNZ HB 5433:2021



Road, Rail, Sea and Air Transport

UN No	1078
Class - Primary	2.2
Packing Group	N/A
Proper Shipping Name	REFRIGERANT GAS, N.O.S (R 417A)
Marine Pollutant	No
Special Provisions	274

Section 15 Regulatory Information

This substance is NOT classified hazardous according to the EPA Hazardous Substances (Classification) Notice 2020

HSW (HS) Regulations 2017 and EPA Notices	Trigger Quantity
Certified Handler	Not required
Location Certificate	Not required
Tracking Trigger Quantities	Not required
Signage Trigger Quantities	Not required
Fire Extinguisher Quantities	Not required
Emergency Response Plan	Not required
Secondary Containment	Not required
Restriction of Use	Only use for the intended purpose.

Section 16 Other Information

Glossary

Cat	Category
EC ₅₀	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
HSW	Health and Safety at Work.
LC ₅₀	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD ₅₀	Lethal dose to kill 50% of test animals/organisms.

Product Name: R-417A
Date of SDS: 4 March 2024

SDS Prepared by: Technical Compliance Consultants (NZ) Ltd
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LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2023 14th edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2020
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

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Please contact the New Zealand distributor, if further information is required.

Issue Date: 4 March 2024 Review Date: 4 March 2029