Material Safety Data Sheet

R438A

SECTION I - CHEMICAL PRODUCT

Chinese Name : R438A
Product Name in English : R438A

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation： Preparation

Components/Impurities ：

CHEMICAL ENTITY	CAS NO.	PROPORTION
Tetrafluoroethane	811-97-2	44.2%
Pentafluoroethane	354-33-6	45%
Difluoromethane	75-10-5	8.5%
Butane	106-97-8	1.7%
Isopentane	78-78-4	0.6%

SECTION III - HAZARDS IDENTIFICATION

Hazards identification ： In high concentrations may cause asphyxiation.
Liquefied gas
Not classified as dangerous preparation.

SECTION IV - FIRST AID MEASURES

Inhalation： Remove victim from 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. Seek medical advice if effects persist.

Skin contact: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. If swelling, redness, blistering or irritation occurs seek medical assistance. For freeze burns, immediately flood burnt area with plenty of warm water (40 - 44°C) and cover with a clean, dry dressing. Seek immediate medical assistance.

Eye contact: If in eyes wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice. For freeze burns, immediately irrigate with copious quantities of warm (40 - 44 °C) water for at least 15 minutes. Eyelids to be held open. Remove clothing if contaminated and wash skin. Urgently seek medical assistance. Transport to hospital or medical centre.

Ingestion： Unlikely to be a route of exposure due to high evaporation rate. However, rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Seek medical advice**.**

Notes to physician: Treat symptomatically.

SECTION V - FIRE FIGHTING MEASURES

Specific hazards ： Non-combustible material.

Fire fighting further advice: Heating can cause expansion or decomposition leading to violent rupture of containers. On decomposing may emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if

risk of exposure to products of decomposition.

Hazchem Code: 2TE

Suitable extinguishing media: Not combustible, however, if material is involved in a fire use water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

SECTION VI - ACCIDENTAL RELEASE MEASURES

If safe, cut off source of leak. If release is large, cut off all ignition sources and evacuate all non-essential personnel from the area. If possible, ventilate the area. If the incident is significant seek immediate assistance from local fire authorities and police. If possible monitor the vapour concentration until dissipated.

SECTION VII - HANDLING AND STORAGE

Handling: Avoid skin and eye contact and inhalation of vapour.

Storage: Store in a cool, dry, well-ventilated place and out of direct sunlight. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks. This material is classified as a Dangerous Good Class 2.2 Non Flammable, Non Toxic Gas as per the criteria of the Australian Dangerous Goods Code and must be stored in accordance with the relevant regulations.

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept too as low a level as is workable. These 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. If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

Biological Limit Values: As per the “National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)” the ingredients in this material do not have a Biological Limit Allocated.

Engineering measures: Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use with local exhaust ventilation or while wearing appropriate respirator. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Natural ventilation should be adequate under normal use conditions. Keep containers closed when not in use.

Personal protection equipment: OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES. Wear overalls, safety glasses and impervious gloves. Available information suggests that gloves made from polyvinyl chloride (PVC) should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. If risk of inhalation of exists, wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

SECTION IX - PHYSICAL & CHEMICAL PROPERTIES

Form / Colour / Odour:	Clear colourless gas.
Solubility:	Insoluble in water
Specific Gravity (25 °C):	1.15
Relative Vapour Density (air=1):	3.5
Vapour Pressure (25 °C):	11,171 hPa
Flash Point (°C):	N App
Flammability Limits (%):	N App
Autoignition Temperature (°C):	N App

Melting Point/Range (°C):	N App
Boiling Point (°C):	-42.3
pH:	N App
Total VOC (g/Litre):	N Av

(Typical values only - consult specification sheet)

N Av = Not available N App = Not applicable

SECTION X - STABILITY AND REACTIVITY

Chemical stability: This material is thermally stable when stored and used as directed.

Conditions to avoid: Elevated temperatures and sources of ignition.

Incompatible Materials: Oxidising agents, alkali metals, powdered metals.

Hazardous decomposition products: Oxides of carbon and nitrogen, smoke and other toxic fumes.

Hazardous reactions: No known hazardous reactions.

SECTION XI - 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:

Acute Effects

Inhalation: Material may be irritant to mucous membranes and respiratory tract.

Skin contact: Liquid splashes or spray may cause freeze burns. Contact with skin may result in irritation.

Eye contact: May be an eye irritant. Liquid splashes or spray may cause freeze burns to the eye.

Ingestion: Unlikely route of exposure. Swallowing can result in nausea, vomiting and irritation of the gastrointestinal tract.

Long Term Effects: No information available for product.

Acute toxicity / Chronic toxicity

No LD50 data available for the product.

SECTION XII - ECOLOGICAL INFORMATION

Avoid contaminating waterways.

Ecotoxicity: No information available.

Persistence and degradability: No information available.

Mobility: No information available.

SECTION XIII - DISPOSAL CONSIDERATIONS

General ： Avoid discharge to atmosphere.Do not discharge into any place where its accumulation could be dangerous.Refer to supplier's waste gas recovery programme. Contact supplier if guidance is required.

SECTION XIV - TRANSPORT INFORMATION

UN No:	1078
Dangerous Goods Class:	2.2
Packing Group:	Not allocated
Hazchem Code:	2TE
Emergency Response Guide No:	06

SECTION XV - REGULATORY INFORMATION

Number in Annex I of Dir 67/548: Not applicable for preparations

EC Classification :Not classified as dangerous preparation.Labelling of cylinders

-Symbols: Label 2.2: non flammable non toxic gas

SECTION XVI - OTHER INFORMATION

Issuing Date: 2007/12/22 **Revision Date:** 2020/1/22

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

End of Document