

# SAFETY DATA SHEET

## R404A

Infosafe No.: HY42C  
ISSUED Date : 23/12/2022  
ISSUED by: A-GAS (AUSTRALIA) PTY LTD

### Section 1 - Identification

---

**Product Identifier**

R404A

**Company Name**

A-GAS (AUSTRALIA) PTY LTD

**Address**9-11 OXFORD RD LAVERTON NORTH  
VICTORIA 3026 AUSTRALIA**Telephone/Fax Number**

Tel: (03) 9368 9222

**Emergency Phone Number**A-GAS (AUSTRALIA) PTY LTD 1800 737 001  
CHEMWATCH EMERGENCY RESPONSE: +61 1800 951 288, +61 3 9573 3188**Recommended use of the chemical and restrictions on use**

Relevant identified uses

Refrigerant, for professional users only

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

**Other Names**

Name
SUVA HP62
404A
SUVA 404A
SUVA R404A
HP62

**Additional Information**

Once connected and if the message is not in your preferred language then please dial 01

### Section 2 - Hazard(s) Identification

---

**GHS classification of the substance/mixture**

Classification [1] : Gases Under Pressure (Liquefied Gas)

**Signal Word (s)**

WARNING

**Hazard Statement (s)**AUH044 Risk of explosion if heated under confinement.  
H280 Contains gas under pressure; may explode if heated.**Pictogram (s)**

Gas cylinder

**Precautionary Statement – Prevention**

Not Applicable

**Precautionary Statement – Response**

Not Applicable

**Precautionary Statement – Storage**

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

**Precautionary Statement – Disposal**

Not Applicable

**Precautionary Statement – General**

P101 If medical advice is needed, have product container or label at hand.

P102 Keep out of reach of children.

P103 Read label before use.

**Other Information**

Legend: 1. Classified by ; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

**Section 3 - Composition and Information on Ingredients****Ingredients**

Name	CAS	Proportion
1, 1, 1- Trifluoroethane	420- 46- 2	30- 60 %weight
Pentafluoroethane	354- 33- 6	30- 60 %weight
1, 1, 1, 2- Tetrafluoroethane	811- 97- 2	<10 %weight

**Other Information**

Substances

See section below for composition of Mixtures

Legend: 1. Classified by ; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&amp;L; \* EU IOELVs available

**Section 4 - First Aid Measures****Inhalation**

Following exposure to gas, remove the patient from the gas source or contaminated area.

NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer.

Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures.

If the patient is not breathing spontaneously, administer rescue breathing.

If the patient does not have a pulse, administer CPR.

If medical oxygen and appropriately trained personnel are available, administer 100% oxygen.

Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction.

Keep the patient warm, comfortable and at rest while awaiting medical care.

MONITOR THE BREATHING AND PULSE, CONTINUOUSLY.

Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.

**Ingestion**

Not considered a normal route of entry.

For advice, contact a Poisons Information Centre or a doctor.

Avoid giving milk or oils.

Avoid giving alcohol.

### **Skin**

If skin contact occurs:

Immediately remove all contaminated clothing, including footwear.

Flush skin and hair with running water (and soap if available).

Seek medical attention in event of irritation.

In case of cold burns (frost-bite):

Move casualty into warmth before thawing the affected part; if feet are affected carry if possible

Bathe the affected area immediately in luke-warm water (not more than 35 deg C) for 10 to 15 minutes, immersing if possible and without rubbing

DO NOT apply hot water or radiant heat.

Apply a clean, dry, light dressing of "fluffed-up" dry gauze bandage

If a limb is involved, raise and support this to reduce swelling

If an adult is involved and where intense pain occurs provide pain killers such as paracetamol

Transport to hospital, or doctor

Subsequent blackening of the exposed tissue indicates potential of necrosis, which may require amputation.

### **Eye**

If product comes in contact with eyes remove the patient from gas source or contaminated area.

Take the patient to the nearest eye wash, shower or other source of clean water.

Open the eyelid(s) wide to allow the material to evaporate.

Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back.

Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.

The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent further damage.

Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s)

Transport to hospital or doctor.

Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur.

If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage.

Ensure verbal communication and physical contact with the patient.

DO NOT allow the patient to rub the eyes

DO NOT allow the patient to tightly shut the eyes

DO NOT introduce oil or ointment into the eye(s) without medical advice

DO NOT use hot or tepid water.

### **Indication of immediate medical attention and special treatment needed if necessary**

for intoxication due to Freons/ Halons;

A: Emergency and Supportive Measures

Maintain an open airway and assist ventilation if necessary

Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.

Monitor the ECG for 4-6 hours

B: Specific drugs and antidotes:

There is no specific antidote

C: Decontamination

Inhalation; remove victim from exposure, and give supplemental oxygen if available.

Ingestion; (a) Prehospital: Administer activated charcoal, if available. DO NOT induce vomiting because of rapid absorption and the risk of abrupt onset CNS depression. (b)

Hospital: Administer activated charcoal, although the efficacy of charcoal is unknown. Perform gastric lavage only if the ingestion was very large and recent (less than 30 minutes)

D: Enhanced elimination:

There is no documented efficacy for diuresis, haemodialysis, haemoperfusion, or repeat-dose charcoal.

POISONING and DRUG OVERDOSE, Californian Poison Control System Ed. Kent R Olson; 3rd Edition

Do not administer sympathomimetic drugs unless absolutely necessary as material may increase myocardial irritability.

No specific antidote.

Because rapid absorption may occur through lungs if aspirated and cause systematic effects, the decision of whether to induce vomiting or not should be made by an attending physician.

If lavage is performed, suggest endotracheal and/or esophageal control.

Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

Treatment based on judgment of the physician in response to reactions of the patient

For gas exposures:

---

#### BASIC TREATMENT

---

Establish a patent airway with suction where necessary.

Watch for signs of respiratory insufficiency and assist ventilation as necessary.

Administer oxygen by non-rebreather mask at 10 to 15 l/min.

Monitor and treat, where necessary, for pulmonary oedema .

Monitor and treat, where necessary, for shock.

Anticipate seizures.

---

#### ADVANCED TREATMENT

---

Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.

Positive-pressure ventilation using a bag-valve mask might be of use.

Monitor and treat, where necessary, for arrhythmias.

Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.

Drug therapy should be considered for pulmonary oedema.

Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.

Treat seizures with diazepam.

Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.

EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994

## Section 5 - Firefighting Measures

---

### Unsuitable Extinguishing Media

DO NOT direct water at source of leak or venting safety devices as icing may occur.

### Specific Methods

---

#### GENERAL

---

Alert Fire Brigade and tell them location and nature of hazard.

Wear breathing apparatus and protective gloves.

Fight fire from a safe distance, with adequate cover.

Use water delivered as a fine spray to control fire and cool adjacent area.

### Specific hazards arising from the chemical

Fire Incompatibility: Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

#### Fire/Explosion Hazard:

Containers may explode when heated - Ruptured cylinders may rocket

Fire exposed containers may vent contents through pressure relief devices.

High concentrations of gas may cause asphyxiation without warning.

May decompose explosively when heated or involved in fire.

Contact with gas may cause burns, severe injury and/ or frostbite.

Decomposition may produce toxic fumes of:

carbon monoxide (CO)

carbon dioxide (CO<sub>2</sub>)

hydrogen fluoride

other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

### Hazchem Code

2TE

### Decomposition Temperature

728°C

### Extinguishing Media - Small Fires

Use extinguishing agent suitable for type of surrounding fire.

### Extinguishing Media - Large Fires

Cool cylinder.

## Section 6 - Accidental Release Measures

---

### Clean-up Methods - Small Spillages

Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used.

DO NOT enter confined spaces where gas may have accumulated.

Increase ventilation.

### Clean-up Methods - Large Spillages

Clear area of all unprotected personnel and move upwind.

Alert Emergency Authority and advise them of the location and nature of hazard.

Wear breathing apparatus and protective gloves.

Prevent by any means available, spillage from entering drains and water-courses.

Remove leaking cylinders to a safe place.

Fit vent pipes. Release pressure under safe, controlled conditions

Burn issuing gas at vent pipes.

DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

### Other Information

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## Section 7 - Handling and Storage

---

### Precautions for Safe Handling

Safe handling:

· Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal.

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

· The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines.

· Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended.

· Before connecting gas cylinders, ensure manifold is mechanically secure and does not contain another gas.

DO NOT transfer gas from one cylinder to another.

Other information:

Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open.

Such compounds should be sited and built in accordance with statutory requirements.

The storage compound should be kept clear and access restricted to authorised personnel only.

Cylinders stored in the open should be protected against rust and extremes of weather.

DO NOT store above 50 deg. C.

### Conditions for safe storage, including any incompatibilities

Suitable container:

DO NOT use aluminium or galvanised containers

Cylinder:

Ensure the use of equipment rated for cylinder pressure.

Ensure the use of compatible materials of construction.

Valve protection cap to be in place until cylinder is secured, connected.

Cylinder must be properly secured either in use or in storage.

Storage incompatibility:

Avoid reaction with oxidising agents

Avoid magnesium, aluminium and their alloys, brass and steel.

### Other Information

+ + + + + + +

X — Must not be stored together

0 — May be stored together with specific preventions

+ — May be stored together

Note: Depending on other risk factors, compatibility assessment based on the table above may not be relevant to storage situations, particularly where large volumes of dangerous goods are stored and handled. Reference should be made to the Safety Data Sheets for each substance or article and risks assessed accordingly.

## Section 8 - Exposure Controls and Personal Protection

### Occupational exposure limit values

#### INGREDIENT DATA

Source: Australia Exposure Standards

Ingredient: 1,1,1,2-tetrafluoroethane

Material name: 1,1,1,2-Tetrafluoroethane

TWA: 1000 ppm / 4240 mg/m<sup>3</sup>

STEL: Not Available

Peak: Not Available

Notes: Not Available

#### Emergency Limits

Ingredient: 1,1,1,2-tetrafluoroethane

TEEL-1: Not Available

TEEL-2: Not Available

TEEL-3: Not Available

Ingredient: 1,1,1-trifluoroethane

Original IDLH: Not Available

Revised IDLH: Not Available

Ingredient: pentafluoroethane

Original IDLH: Not Available

Revised IDLH: Not Available

Ingredient: 1,1,1,2-tetrafluoroethane

Original IDLH: Not Available

Revised IDLH: Not Available

### Engineering Controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

### Respiratory Protection

Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

### Eye and Face Protection

Safety glasses with side shields.

Chemical goggles.

Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.

### Hand Protection

When handling sealed and suitably insulated cylinders wear cloth or leather gloves.

Insulated gloves:

NOTE: Insulated gloves should be loose fitting so that may be removed quickly if liquid is spilled upon them. Insulated gloves are not made to permit hands to be placed in the liquid; they provide only short-term protection from accidental contact with the liquid.

### Personal Protective Equipment

Other protection

Protective overalls, closely fitted at neck and wrist.

Eye-wash unit.

Ensure availability of lifeline in confined spaces.

Staff should be trained in all aspects of rescue work.

## Section 9 - Physical and Chemical Properties

Properties	Description	Properties	Description
------------	-------------	------------	-------------

<b>Form</b>	Gas	<b>Appearance</b>	Colourless liquefied gas with slight ether-like odour
<b>Odour</b>	Not Available	<b>Melting/Freezing Point</b>	Not Available
<b>Boiling Point</b>	-46.2°C	<b>Decomposition Temperature</b>	728°C
<b>Solubility in Water</b>	Not Available	<b>pH</b>	~7 (as supplied) Not Applicable as a solution (1%)
<b>Vapour Pressure</b>	1254.6 kPa @ 25 C, 2310 @ 50 deg C	<b>Relative Vapour Density (Air=1)</b>	3.4 @ 25 deg C
<b>Evaporation Rate</b>	Not Available	<b>Physical State</b>	Liquefied Gas
<b>Odour Threshold</b>	Not Available	<b>Viscosity</b>	Not Available
<b>Volatile Component</b>	Not Available	<b>Partition Coefficient: n-octanol/water (log value)</b>	Not Available
<b>Surface Tension</b>	Not Available	<b>Flash Point</b>	Not Applicable
<b>Flammability</b>	Not Applicable	<b>Auto-Ignition Temperature</b>	Not Applicable
<b>Explosion Limit - Upper</b>	Not Applicable	<b>Explosion Limit - Lower</b>	Not Applicable
<b>Explosion Properties</b>	Not Available	<b>Molecular Weight</b>	Not Applicable
<b>Oxidising Properties</b>	Not Available	<b>Initial boiling point and boiling range</b>	-46.2 °C
<b>Relative Density</b>	1.044 @ 25 deg C (Water = 1)		

**Other Information**

Taste: Not Available  
 Gas group: Not Available  
 VOC g/L: Not Available

**Section 10 - Stability and Reactivity****Reactivity**

See section 7

**Chemical Stability**

Unstable in the presence of incompatible materials.  
 Product is considered stable.  
 Hazardous polymerisation will not occur.  
 Extremely high temperatures.

**Possibility of hazardous reactions**

See section 7

**Conditions to Avoid**

See section 7

**Incompatible Materials**

See section 7

**Hazardous Decomposition Products**

See section 5

**Section 11 - Toxicological Information****Toxicology Information**

R404A

TOXICITY: Not Available

IRRITATION: Not Available

1,1,1-trifluoroethane

TOXICITY: Inhalation(Rat) LC50; >540000 ppm4h[2]

IRRITATION: Not Available

pentafluoroethane

TOXICITY: Inhalation(Rat) LC50: >709000 ppm4h[2]

IRRITATION: Not Available

1,1,1,2-tetrafluoroethane

TOXICITY: Inhalation(Rat) LC50: 359453.102 ppm4h[2]

IRRITATION: Not Available

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

#### 1,1,1-TRIFLUOROETHANE

NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

#### PENTAFLUOROETHANE

Cardiac sensitisation threshold limit >245400 mg/m<sup>3</sup> Anaesthetic effects threshold limit 490800 mg/m<sup>3</sup> \* DuPont SDS

#### 1,1,1,2-TETRAFLUOROETHANE

\* with added oxygen - ZhongHao New Chemical Materials MSDS Excessive concentration can have a narcotic effect; inhalation of high concentrations of decomposition products can cause lung oedema.

Disinfection by products (DBPs) re formed when disinfectants such as chlorine, chloramine, and ozone react with organic and inorganic matter in water. The observations that some DBPs such as trihalomethanes (THMs), di-/trichloroacetic acids, and 3-chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone (MX) are carcinogenic in animal studies have raised public concern over the possible adverse health effects of DBPs. To date, several hundred DBPs have been identified.

Numerous haloalkanes and haloalkenes have been tested for carcinogenic and mutagenic activities. In general, the genotoxic potential is dependent on the nature, number, and position of halogen(s) and the molecular size of the compound.

Acute Toxicity: Data either not available or does not fill the criteria for classification

#### Ingestion

Overexposure is unlikely in this form.

Not normally a hazard due to physical form of product.

Considered an unlikely route of entry in commercial/industrial environments

#### Inhalation

Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.

Common, generalised symptoms associated with non-toxic gas inhalation include :

central nervous system effects such as headache, confusion, dizziness, progressive stupor, coma and seizures;

respiratory system complications may include tachypnoea and dyspnoea;

cardiovascular effects may include circulatory collapse and arrhythmias;

gastrointestinal effects may also be present and may include mucous membrane irritation and nausea and vomiting.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

In common with other halogenated aliphatics, fluorocarbons may cause dermal problems due to a tendency to remove natural oils from the skin causing irritation and the development of dry, sensitive skin. They do not appear to be appreciably absorbed.

#### Skin

Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

Vapourising liquid causes rapid cooling and contact may cause cold burns, frostbite, even through normal gloves. Frozen skin tissues are painless and appear waxy and yellow. Signs and symptoms of frost-bite may include "pins and needles", paleness followed by numbness, a hardening and stiffening of the skin, a progression of colour changes in the affected area, (first white, then mottled and blue and eventually black; on recovery, red, hot, painful and blistered).

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.



**Skin Corrosion/Irritation**

Data either not available or does not fill the criteria for classification

**Eye**

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

Vapourising liquid causes rapid cooling and contact may cause cold burns, frostbite, even through normal gloves. Frozen skin tissues are painless and appear waxy and yellow. Signs and symptoms of frost-bite may include "pins and needles", paleness followed by numbness, a hardening and stiffening of the skin, a progression of colour changes in the affected area, (first white, then mottled and blue and eventually black; on recovery, red, hot, painful and blistered).

**Serious Eye Damage/Irritation**

Data either not available or does not fill the criteria for classification

**Respiratory Sensitisation**

Data either not available or does not fill the criteria for classification

**Skin Sensitisation**

Data either not available or does not fill the criteria for classification

**Carcinogenicity**

Data either not available or does not fill the criteria for classification

**Reproductive Toxicity**

Data either not available or does not fill the criteria for classification

**STOT - Single Exposure**

Data either not available or does not fill the criteria for classification

**STOT - Repeated Exposure**

Data either not available or does not fill the criteria for classification

**Aspiration Hazard**

Data either not available or does not fill the criteria for classification

**Mutagenicity**

Data either not available or does not fill the criteria for classification

**Chronic Effects**

Principal route of occupational exposure to the gas is by inhalation.

It is generally accepted that the fluorocarbons are less toxic than the corresponding halogenated aliphatic based on chlorine. Repeated inhalation exposure to the fluorocarbon FC-11 does not produce pathologic lesions of the liver and other visceral organs in experimental animals. There has been conjecture in non-scientific publications that fluorocarbons may cause leukemia, cancer, sterility and birth defects; these have not been verified by current research. The high incidence of cancer, spontaneous abortion and congenital anomalies amongst hospital personnel, repeatedly exposed to fluorine-containing general anaesthetics, has caused some scientists to call for a lowering of the fluorocarbon exposure standard to 5 ppm since some are mutagens.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

**Section 12 - Ecological Information**

---

**Ecotoxicity**

R404A

ENDPOINT: Not Available

TEST DURATION (HR): Not Available

SPECIES: Not Available

VALUE: Not Available

SOURCE: Not Available

1,1,1-trifluoroethane

ENDPOINT: EC0(ECx)

TEST DURATION (HR): 96h

SPECIES: Algae or other aquatic plants

VALUE: >44mg/l

SOURCE: 2

ENDPOINT: EC50

TEST DURATION (HR): 72h

SPECIES: Algae or other aquatic plants

VALUE: ~71mg/l

SOURCE: 2

pentafluoroethane  
ENDPOINT: EC50  
TEST DURATION (HR): 72h  
SPECIES: Algae or other aquatic plants  
VALUE: >114mg/L  
SOURCE: 2

ENDPOINT: EC50  
TEST DURATION (HR): 48h  
SPECIES: Crustacea  
VALUE: >97.9mg/L  
SOURCE: 2

ENDPOINT: LC50  
TEST DURATION (HR): 96h  
SPECIES: Fish  
VALUE: >81.8mg/L  
SOURCE: 2

ENDPOINT: NOEC(ECx)  
TEST DURATION (HR): 96h  
SPECIES: Fish  
VALUE: 10mg/l  
SOURCE: 2

ENDPOINT: EC50  
TEST DURATION (HR): 72h  
SPECIES: Algae or other aquatic plants  
VALUE: 142mg/l  
SOURCE: 2

1,1,1,2-tetrafluoroethane  
ENDPOINT: NOEC(ECx)  
TEST DURATION (HR): 96h  
SPECIES: Fish  
VALUE: 300mg/l  
SOURCE: Not Available

ENDPOINT: EC50  
TEST DURATION (HR): 72h  
SPECIES: Algae or other aquatic plants  
VALUE: >114mg/l  
SOURCE: 2

ENDPOINT: EC50  
TEST DURATION (HR): 48h  
SPECIES: Crustacea  
VALUE: 980mg/l  
SOURCE: Not Available

ENDPOINT: LC50  
TEST DURATION (HR): 96h  
SPECIES: Fish  
VALUE: 450mg/l  
SOURCE: Not Available

ENDPOINT: EC50  
TEST DURATION (HR): 96h  
SPECIES: Algae or other aquatic plants  
VALUE: 142mg/l  
SOURCE: 2

Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic

Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

**Persistence and degradability**

Ingredient: 1,1,1-trifluoroethane

Persistence: Water/Soil: HIGH

Persistence: Air: HIGH

Ingredient: pentafluoroethane

Persistence: Water/Soil: HIGH

Persistence: Air: HIGH

Ingredient: 1,1,1,2-tetrafluoroethane

Persistence: Water/Soil: HIGH

Persistence: Air: HIGH

**Mobility**

Ingredient: 1,1,1-trifluoroethane

Mobility: LOW (KOC = 48.64)

Ingredient: pentafluoroethane

Mobility: LOW (KOC = 154.4)

Ingredient: 1,1,1,2-tetrafluoroethane

Mobility: LOW (KOC = 96.63)

**Bioaccumulative Potential**

Ingredient: 1,1,1-trifluoroethane

Bioaccumulation: LOW (Log KOW = 1.7393)

Ingredient: pentafluoroethane

Bioaccumulation: LOW (Log KOW = 1.5472)

Ingredient: 1,1,1,2-tetrafluoroethane

Bioaccumulation: LOW (Log KOW = 1.68)

## Section 13 - Disposal Considerations

---

**Waste Disposal**

Product / Packaging disposal:

Evaporate residue at an approved site.

Return empty containers to supplier. If containers are marked non-returnable establish means of disposal with manufacturer prior to purchase.

Ensure damaged or non-returnable cylinders are gas-free before disposal.

## Section 14 - Transport Information

---

**UN Number**

3337

**Proper Shipping Name**

REFRIGERANT GAS R 404A

**Transport Hazard Class**

2.2

**Hazchem Code**

2TE

**IERG Number**

06

**IATA UN Number**

3337

**IATA Proper Shipping Name**

REFRIGERANT GAS R 404A

**IATA Transport Hazard Class**

2.2

**IMDG UN Number**

3337

**IMDG Proper Shipping Name**

REFRIGERANT GAS R 404A

**IMDG Transport Hazard Class**

2.2

**Additional Information**

Labels Required:

Marine Pollutant: NO

HAZCHEM: 2TE

Land transport (ADG)

UN number: 3337

UN proper shipping name: REFRIGERANT GAS R 404A

Transport hazard class(es):

Class: 2.2

Subrisk: Not Applicable

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user:

Special provisions: Not Applicable

Limited quantity: 120 ml

Air transport (ICAO-IATA / DGR)

UN number: 3337

UN proper shipping name: Refrigerant gas R 404A

Transport hazard class(es):

ICAO/IATA Class: 2.2

ICAO / IATA Subrisk: Not Applicable

ERG Code: 2L

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user:

Special provisions: Not Applicable

Cargo Only Packing Instructions: 200

Cargo Only Maximum Qty / Pack: 150 kg

Passenger and Cargo Packing Instructions: 200

Passenger and Cargo Maximum Qty / Pack: 75 kg

Passenger and Cargo Limited Quantity Packing Instructions: Forbidden

Passenger and Cargo Limited Maximum Qty / Pack: Forbidden

Sea transport (IMDG-Code / GGVSee)

UN number: 3337

UN proper shipping name: REFRIGERANT GAS R 404A

Transport hazard class(es):

IMDG Class: 2.2

IMDG Subrisk: Not Applicable

Packing group: Not Applicable

Environmental hazard: Not Applicable

Special precautions for user:

EMS Number: F-C, S-V

Special provisions: Not Applicable

Limited Quantities: 120 mL

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name: 1,1,1-trifluoroethane

Group: Not Available

Product name: pentafluoroethane

Group: Not Available

Product name: 1,1,1,2-tetrafluoroethane

Group: Not Available

Transport in bulk in accordance with the ICG Code

Product name: 1,1,1-trifluoroethane

Ship Type: Not Available

Product name: pentafluoroethane

Ship Type: Not Available

Product name: 1,1,1,2-tetrafluoroethane

Ship Type: Not Available

## Section 15 - Regulatory Information

---

### Regulatory Information

Safety, health and environmental regulations / legislation specific for the substance or mixture

1,1,1-trifluoroethane is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

pentafluoroethane is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

1,1,1,2-tetrafluoroethane is found on the following regulatory lists

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4

Australian Inventory of Industrial Chemicals (AIIC)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic

National Inventory Status:

National Inventory: China - IECSC

Status: Yes

National Inventory: Europe - EINEC / ELINCS / NLP

Status: Yes

National Inventory: Japan - ENCS

Status: Yes

National Inventory: Korea - KECI

Status: Yes

National Inventory: New Zealand - NZIoC

Status: Yes

National Inventory: Taiwan - TCSI

Status: Yes

National Inventory: Mexico - INSQ

Status: Yes

National Inventory: Vietnam - NCI

Status: Yes

National Inventory: Russia - FBEPH

Status: Yes

Legend:

Yes = All CAS declared ingredients are on the inventory

No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

#### Poisons Schedule

N/A

#### Global Inventory Status

Country/Region Inventory	Status Description	Country/Region Inventory	Status Description
<b>Australia (AICS/AIIC)</b>	National Inventory: Australia - AIIC / Australia Non-Industrial Use Status: Yes	<b>Canada (DSL/NDSL)</b>	Status: National Inventory: Canada - DSL Status: Yes  National Inventory: Canada - NDSL Status: No (1,1,1-trifluoroethane; pentafluoroethane; 1,1,1,2-tetrafluoroethane)
<b>Philippines (PICCS)</b>	National Inventory: Philippines - PICCS Status: Yes	<b>USA (TSCA)</b>	National Inventory: USA - TSCA Status: Yes

## Section 16 - Any Other Relevant Information

#### Empirical Formula & Structural Formula

Not Applicable

#### Other Information

Version No: 9.1

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Hazard Alert Code: 1

L.GHS.AUS.EN

Other means of identification: Not Available

#### SDS Version Summary

Version : 8.1

Date of Update : 01/11/2019

Sections Updated : One-off system update. NOTE: This may or may not change the GHS classification

Version : 9.1

Date of Update : 23/12/2022

Sections Updated : Classification review due to GHS Revision change.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

#### Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average

PC-STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit

IDLH: Immediately Dangerous to Life or Health Concentrations

ES: Exposure Standard

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection  
OTV: Odour Threshold Value  
BCF: BioConcentration Factors  
BEI: Biological Exposure Index  
AIIIC: Australian Inventory of Industrial Chemicals  
DSL: Domestic Substances List  
NDSL: Non-Domestic Substances List  
IECSC: Inventory of Existing Chemical Substance in China  
EINECS: European INventory of Existing Commercial chemical Substances  
ELINCS: European List of Notified Chemical Substances  
NLP: No-Longer Polymers  
ENCS: Existing and New Chemical Substances Inventory  
KECI: Korea Existing Chemicals Inventory  
NZIoC: New Zealand Inventory of Chemicals  
PICCS: Philippine Inventory of Chemicals and Chemical Substances  
TSCA: Toxic Substances Control Act  
TCSI: Taiwan Chemical Substance Inventory  
INSQ: Inventario Nacional de Sustancias Químicas  
NCI: National Chemical Inventory  
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

This SDS has been transcribed into Infosafe GHS format from an original, issued by the manufacturer on the date shown. Any disclaimer by the manufacturer may not be included in the transcription.

---

## END OF SDS

© Copyright Chemical Safety International Pty Ltd

Copyright in the source code of the HTML, PDF, XML, XFO and any other electronic files rendered by an Infosafe system for Infosafe SDS displayed is the intellectual property of Chemical Safety International Pty Ltd.

Copyright in the layout, presentation and appearance of each Infosafe SDS displayed is the intellectual property of Chemical Safety International Pty Ltd.

The compilation of SDS's displayed is the intellectual property of Chemical Safety International Pty Ltd.

Copying of any SDS displayed is permitted for personal use only and otherwise is not permitted. In particular the SDS's displayed cannot be copied for the purpose of sale or licence or for inclusion as part of a collection of SDS without the express written consent of Chemical Safety International Pty Ltd.

Product Name: R404A  
Issue Date: 23/12/2022