

Product Name      **REFRIGERANT R404A**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Supplier Name**                      **REALCOLD PTY LTD**  
**Address**                                1/55 Musgrave Rd, Coopers Plains, QLD, AUSTRALIA, 4108  
**Telephone**                            +61 7 3850 5555  
**Fax**                                        +61 7 3850 5599 (24 Hours)  
**Emergency**                            1300 7325 2653 (24/7) (Australia Only)  
**Email**                                    [reception.au@realcold.com.au](mailto:reception.au@realcold.com.au)  
**Web Site**                                [www.realcold.com.au](http://www.realcold.com.au)  
**Synonym(s)**                            4% 1,1,1,2 TETRAFLUOROETHANE (HFC134A) · 44% PENTAFLUOROETHANE (HFC125) · 55% 1,1,1 TRIFLUOROETHANE (HFC143A)  
**Use(s)**                                    AIR CONDITIONING · REFRIGERANT · REFRIGERATION SYSTEMS  
**SDS Date**                                02 July 2012

## 2. HAZARDS IDENTIFICATION

**NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA**

**RISK PHRASES**

None allocated

**SAFETY PHRASES**

None allocated

**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

|                      |                |                           |                |
|----------------------|----------------|---------------------------|----------------|
| <b>UN Number</b>     | 3337           | <b>DG Division</b>        | 2.2            |
| <b>Packing Group</b> | None Allocated | <b>Subsidiary Risk(s)</b> | None Allocated |
| <b>Hazchem Code</b>  | 2TE            |                           |                |

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

| Ingredient                           | Identification                 | Classification                             | Content |
|--------------------------------------|--------------------------------|--|---------|
| 1,1,1-TRIFLUOROETHANE (HFC-143A)     | CAS: 420-46-2<br>EC: 206-996-5 | Not Available                              | 52%     |
| PENTAFLUOROETHANE (HFC-125)          | CAS: 354-33-6<br>EC: 206-557-8 | Not Available                              | 44%     |
| 1,1,1,2-TETRAFLUOROETHANE (HFC 134A) | CAS: 811-97-2<br>EC: 212-377-0 | E;R4 E;R44 ;S23 ;S3 ;S51 ;S7 ;S9 ;S27 ;S60 | 4%      |

## 4. FIRST AID MEASURES

**Eye**                                        Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention.

**Inhalation**                              If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available.

**Skin**                                        Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C)

**Product Name REFRIGERANT R404A**

for 15 minutes. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention.

**Ingestion** Ingestion is not considered a potential route of exposure.  
**Advice to Doctor** Treat symptomatically.  
**First Aid Facilities** Eye wash facilities and safety shower are recommended.

---

**5. FIRE FIGHTING MEASURES**

---

**Flammability** Non flammable. May evolve toxic gases (fluorides, carbon oxides, hydrocarbons) when heated to decomposition. May also evolve carbonyl halides when heated to decomposition.

**Fire and Explosion** Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

**Extinguishing** Use water fog to cool containers from protected area.

**Hazchem Code** 2TE

|   |  |
|---|--|
| 2 | Water Fog (or fine water spray if fog unavailable)                         |
| T | Self Contained Breathing apparatus and protective gloves.                  |
| E | Evacuation of people in the vicinity of the incident should be considered. |

---

**6. ACCIDENTAL RELEASE MEASURES**

---

**Spillage** If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Use personal protective equipment. Always ensure cylinder pressure is below equipment pressure rating and relief valve setting. Contact manufacturer for further information. Leak checking may be done by pressure drop test or by using soapy water on outlets and inlets. Shut cylinder valve to stop gas leaks from equipment if possible and safe to do so. Depressurise the equipment, disconnect cylinder from equipment and move the cylinder to a well vented area, preferably outdoors. Never attempt to repair a leaking or damaged cylinder valve.

---

**7. STORAGE AND HANDLING**

---

**Storage** Do not store near incompatible materials. Cylinders should be stored below 45°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

**Handling** Use of safe work practices are recommended to avoid eye or skin contact and inhalation. 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.

---

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

---

**Exposure Standards**

| Ingredient                       | Reference | TWA        |                   | STEL |                   |
|----------------------------------|-----------|------------|-------------------|------|-------------------|
|                                  |           | ppm        | mg/m <sup>3</sup> | ppm  | mg/m <sup>3</sup> |
| 1,1,1,2-Tetrafluoroethane        | SWA (AUS) | 1000       | 4240              | --   | --                |
| 1,1,1-TRIFLUOROETHANE (HFC-143A) | SWA (AUS) | Asphyxiant |                   |      |                   |
| PENTAFLUOROETHANE (HFC-125)      | SWA (AUS) | Asphyxiant |                   |      |                   |

**Biological Limits** No biological limit allocated.

**Product Name      REFRIGERANT R404A**

**Engineering Controls**      Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

**PPE**

**Eye / Face**      Wear safety glasses.  
**Hands**      Wear nitrile gloves.  
**Body**      Wear coveralls and safety boots.  
**Respiratory**      Where an inhalation risk exists, wear an Air-line respirator.



---

**9. PHYSICAL AND CHEMICAL PROPERTIES**

---

|                                  |   |
|----------------------------------|---|
| <b>Appearance</b>                | COLOURLESS GAS (LIQUEFIED UNDER PRESSURE) |
| <b>Odour</b>                     | SLIGHT ETHEREAL ODOUR                     |
| <b>Flammability</b>              | NON FLAMMABLE                             |
| <b>Flash point</b>               | NOT RELEVANT                              |
| <b>Boiling point</b>             | -47.2°C to -46.4°C                        |
| <b>Melting point</b>             | -160°C                                    |
| <b>Evaporation rate</b>          | NOT AVAILABLE                             |
| <b>pH</b>                        | NOT AVAILABLE                             |
| <b>Vapour density</b>            | 3.42 (Air = 1)                            |
| <b>Specific gravity</b>          | 1.21                                      |
| <b>Solubility (water)</b>        | INSOLUBLE                                 |
| <b>Vapour pressure</b>           | 8270 mm Hg @ 20°C                         |
| <b>Upper explosion limit</b>     | NOT AVAILABLE                             |
| <b>Lower explosion limit</b>     | NOT AVAILABLE                             |
| <b>Autoignition temperature</b>  | NOT AVAILABLE                             |
| <b>Decomposition temperature</b> | NOT AVAILABLE                             |
| <b>Viscosity</b>                 | NOT AVAILABLE                             |
| <b>Partition coefficient</b>     | NOT AVAILABLE                             |
| <b>% Volatiles</b>               | NOT AVAILABLE                             |

---

**10. STABILITY AND REACTIVITY**

---

|   |   |
|---|---|
| <b>Chemical Stability</b>               | Stable under recommended conditions of storage.   |
| <b>Conditions to Avoid</b>              | Avoid heat, sparks, open flames and other ignition sources.                                   |
| <b>Material to Avoid</b>                | Incompatible with oxidising agents (eg. hypochlorites), alkalis/ alkali earth metals.         |
| <b>Hazardous Decomposition Products</b> | May evolve toxic gases (fluorides, carbon oxides, hydrocarbons) when heated to decomposition. |
| <b>Hazardous Reactions</b>              | Polymerization will not occur.  |

---

**11. TOXICOLOGICAL INFORMATION**

---

|                              |  |
|------------------------------|--|
| <b>Health Hazard Summary</b> | Asphyxiant gas - non irritant. Adverse health effects may result from exposure at high levels or with direct contact. Prevent vapour build up and direct eye or skin contact. Over exposure may result in cardiac arrhythmias (irregular beating or arrest of the heart) in sensitive individuals. Individuals with pre-existing medical conditions may be at increased risk if over exposed. The manufacturer states that overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. |
| <b>Eye</b>                   | Direct contact with evaporating liquid may result in cold burns, similar to frostbite injury, with possible permanent damage.  |
| <b>Inhalation</b>            | Asphyxiant. Effects are proportional to oxygen displacement. Acts as a simple asphyxiant by displacing oxygen in the lungs thereby diminishing the supply of oxygen to the blood and tissues.  |
| <b>Skin</b>                  | Direct contact with the liquefied material or escaping compressed gas may cause cold burns similar to frostbite injury.  |
| <b>Ingestion</b>             | Ingestion is considered unlikely due to product form.  |

**Product Name**      **REFRIGERANT R404A**

|                      |   |  |
|----------------------|---|--|
| <b>Toxicity Data</b> | PENTAFLUOROETHANE (HFC-125) (354-33-6)          |  |
|                      | LC50 (inhalation)                               | 2735 g/m <sup>3</sup> /2 hours (mouse)       |
|                      | 1,1,1,2-TETRAFLUOROETHANE (HFC 134A) (811-97-2) |  |
|                      | LC50 (inhalation)                               | 1500 g/m <sup>3</sup> /4 hour (rat)          |
|                      | TCLo (inhalation)                               | 5000 ppm/6 hour/2 years intermittently (rat) |

---

**12. ECOLOGICAL INFORMATION**

---

**Environment**      Release of Hydrogenated chlorofluorocarbon compounds (HCFC's) into the environment should be minimised and where possible, recycling of HCFCs is recommended.

---

**13. DISPOSAL CONSIDERATIONS**

---

**Waste Disposal**      It is an offence under Federal law to knowingly exhaust this product to atmosphere whether by intent or negligence.

**Legislation**      Dispose of in accordance with relevant local legislation.

---

**14. TRANSPORT INFORMATION**

---

**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**



|                             | <b>LAND TRANSPORT<br/>(ADG)</b>  | <b>SEA TRANSPORT<br/>(IMDG / IMO)</b> | <b>AIR TRANSPORT<br/>(IATA / ICAO)</b> |
|-----------------------------|--|---------------------------------------|--|
| <b>UN Number</b>            | 3337   | 3337                                  | 3337                                   |
| <b>Proper Shipping Name</b> | REFRIGERANT GAS R404A  |                                       |  |
| <b>DG Class/ Division</b>   | 2.2  | 2.2                                   | 2.2                                    |
| <b>Subsidiary Risk(s)</b>   | None Allocated   | None Allocated                        | None Allocated                         |
| <b>Packing Group</b>        | None Allocated   | None Allocated                        | None Allocated                         |
| <b>GTEPG</b>                | 2C2  |                                       |  |
| <b>Hazchem Code</b>         | 2TE  |                                       |  |
| <b>Other Information</b>    | Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. |                                       |  |

---

**15. REGULATORY INFORMATION**

---

**Poison Schedule**      A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

**Inventory Listing(s)**      **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**  
All components are listed on AICS, or are exempt.

---

**16. OTHER INFORMATION**

---

**Additional Information**      ASPHYXIANT GASES: Asphyxiant gases may displace oxygen, leading to oxygen deficiency. Where oxygen content is low, effects may include: 12-16% oxygen: increased breathing/ pulse rate, lack of coordination; 10-14%: mental disturbance, fatigue, breathing stress; 6-10%: vomiting, collapse and possible unconsciousness; 0-6%: convulsions, respiratory collapse and death.

ASPHYXIANTS (1): When present in the atmospheres in high concentrations, asphyxiants reduce the oxygen concentration by displacement. Atmospheres deficient in oxygen do not provide adequate sensory warning of danger and most simple asphyxiants are odourless. Therefore it is not appropriate to recommend an exposure standard for each asphyxiant, but to maintain oxygen concentrations. However, some asphyxiants may be given an exposure standard due to the potential for narcotic effects at high concentrations or an explosion hazard.

**Product Name**      **REFRIGERANT R404A**

ASPHYXIANTS (2): There is a significant hazard associated with workers entering poorly ventilated areas (eg. tanks) where oxygen may be deficient. An air supplied breathing apparatus may be required if adequate ventilation is not ensured.

**PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:**

The recommendation for protective equipment contained within this ChemAlert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

**HEALTH EFFECTS FROM EXPOSURE:**

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**Abbreviations**

|                   |   |
|-------------------|---|
| ACGIH             | American Conference of Governmental Industrial Hygienists                                       |
| CAS #             | Chemical Abstract Service number - used to uniquely identify chemical compounds                 |
| CNS               | Central Nervous System  |
| EC No.            | EC No - European Community Number   |
| GHS               | Globally Harmonized System  |
| IARC              | International Agency for Research on Cancer   |
| LD50              | Lethal Dose, 50% / Median Lethal Dose   |
| mg/m <sup>3</sup> | Milligrams per Cubic Metre  |
| PEL               | Permissible Exposure Limit  |
| pH                | relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). |
| ppm               | Parts Per Million   |
| REACH             | Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals              |
| STOT-RE           | Specific target organ toxicity (repeated exposure)  |
| STOT-SE           | Specific target organ toxicity (single exposure)  |
| SUSMP             | Standard for the Uniform Scheduling of Medicines and Poisons                                    |
| TLV               | Threshold Limit Value   |
| TWA/OEL           | Time Weighted Average or Occupational Exposure Limit  |

**Revision History**

| Revision | Description          |
|----------|----------------------|
| 1.0      | Initial SDS Creation |

**Report Status**

This document has been compiled by RMT on behalf of the manufacturer of the product and serves as the manufacturer's Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer 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 the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

**Prepared By**

Risk Management Technologies  
5 Ventnor Ave, West Perth  
Western Australia 6005  
Phone: +61 8 9322 1711  
Fax: +61 8 9322 1794  
Email: info@rmt.com.au  
Web: www.rmt.com.au

**Revision:** 1  
**SDS Date:** 02 July 2012

**End of SDS**