



# Material Safety Data Sheet

## R-416A

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** R-416A  
**DISTRIBUTOR:** National Refrigerants, Inc.  
661 Kenyon Avenue  
Bridgeton, New Jersey 08302

**FOR MORE INFORMATION CALL:**  
(Monday-Friday, 8:00am-5:00pm)  
1-800-262-0012

**IN CASE OF EMERGENCY CALL:**  
CHEMTREC: 1-800-424-9300

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

| <u>INGREDIENT NAME</u>                     | <u>CAS NUMBER</u> | <u>WEIGHT %</u> | <u>EXPOSURE LIMIT</u> |
|--|-------------------|-----------------|-----------------------|
| 1,1,1,2-Tetrafluoroethane (R-134a)         | 811-97-2          | 59.0            | 1000 ppm AIHA WEEL    |
| 1-Chloro-1,2,2,2-tetrafluoroethane (R-124) | 2837-89-0         | 39.5            | 1000 ppm AIHA WEEL    |
| Butane (R-600)                             | 106-97-8          | 1.5             | 800 ppm ACGIH TLV     |

\* Regulated as a Toxic Chemical under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

### 3. HAZARDS IDENTIFICATION

**Degree of Hazard:** Health – 2      Fire – 0      Reactivity – 0  
**Hazard Ratings:** 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

#### POTENTIAL HEALTH HAZARDS

**SKIN:** Avoid direct skin contact. Liquid contact could cause severe burns or frostbite (“cold” burns).

**EYES:** Avoid eye contact. Liquid contact may cause severe and possibly permanent eye damage.

**INHALATION:** Avoid inhalation of high concentrations of gas. Acute overexposure may result in irritation of the throat and lungs. High concentrations in confined areas displace oxygen and can cause dizziness, unconsciousness, and even death with longer exposure. Long-term exposure to this product may cause symptoms of drowsiness, dullness, numbness, headache, dizziness, nausea and increase heart rate.

**ADDITIONAL INFORMATION:** Individuals with preexisting diseases of the central nervous system, cardiovascular system, lungs or kidneys may have increased susceptibility to the toxicity of excessive exposures.

# NATIONAL REFRIGERANTS™

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**OTHER INFORMATION:** The following statement complies with 40CFR III.721.3180 as such applies to R-124 only: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse can be fatal. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact causes frostbite. The effects in animals from single exposure by inhalation include central nervous system effects, anesthesia, and decreased blood pressure. Cardiac sensitization occurred in dogs exposed to a concentration of 2.5 percent in air and given an intravenous epinephrine challenge. Repeated exposures produced increased liver weights, anesthetic effects, irregular respiration, poor coordination, and nonspecific effects such as decreased body weight gain. However, no irreversible effects were seen as evidenced by histopathologic evaluation. As part of an extensive toxicology program, halogenated chlorofluorocarbon-124 will be tested in subchronic, developmental, and chronic/cancer studies. Avoid breathing high concentration of vapor. Use with sufficient ventilation to keep employee exposure below recommended limits. Avoid contact of liquid with skin and eyes. Wear chemical splash goggles and line butyl gloves. DO NOT allow product to contact open flame or electrical heating elements because dangerous decomposition products may form. R-416A/FR-12 is not carcinogenic, mutagenic, a skin sensitizer, or a reproductive toxin according to the OSHA Hazard Communication Standard (HCS) [29 CFR 1910.1200].

#### 4. FIRST AID MEASURES

**SKIN:** If skin is exposed to liquefied/pressurized gas or frost particles, soak with warm water. If frostbite occurs, do not immerse frozen area into hot water or place in front of a heat source.

**EYES:** If eye is exposed to liquefied/pressurized gas or frost particles, immediately flush eyes with large amounts of water and continue flushing for 15 minutes until irritation subsides.

**INHALATION:** Conscious person should be assisted to an uncontaminated area and inhale fresh air. Unconscious person should be moved to an uncontaminated area, given mouth to mouth resuscitation and supplemental oxygen. Do not give epinephrine (adrenaline). Seek immediate medical attention.

**INGESTION:** Not applicable by this route of exposure. Do not attempt to give anything by mouth to an unconscious person. Do not induce vomiting unless instructed to do so by a physician.

**NOTES TO PHYSICIAN:** Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution only in situations of emergency life support.

#### 5. FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:**

|                                      |                              |
|--------------------------------------|------------------------------|
| Flash Point:                         | Not flammable. Will not burn |
| Flammable limits in Air, % by Volume |                              |
| LEL:                                 | Not applicable               |
| UEL:                                 | Not applicable               |
| Autoignition:                        | Unknown                      |

**FIRE AND EXPLOSION HAZARDS:** Cylinders are equipped with temperature and pressure relief devices but still may rupture under fire conditions. Decomposition may occur. Gas vapors can collect and remain in low spots even after the source of gas has been eliminated. 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). Caution! Contents are under pressure and can explode when exposed to heat or flames.



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### FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Keep containers cool with water spray. Self-contained breathing apparatus (SCBA) is required if cylinders rupture or release under fire conditions. Use water to keep fire-exposed containers cool and to protect personnel during shutoff. If possible, stop the flow of gas or vapor, then fight fire according to types of burning material. If flow cannot be safely shut off, allow fire to burn itself out. Cool cylinders with water spray until well after fire is out. Upon exposure to intense heat or flame container may vent rapidly or explode.

**EXTINGUISHING MEDIA:** Extinguishing media is generally not necessary for this material. This material is non-flammable. Use any standard agent – choose the one most appropriate for type of surrounding fire.

### 6. ACCIDENTAL RELEASE MEASURES

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. Comply with Federal, State, and local regulations for reporting releases.

### 7. HANDLING AND STORAGE

**HANDLING (Personnel):** Do not drag, roll, or slide cylinders. Secure cylinders at all times. Use separate control valves or pressure reducing regulators to safely discharge gas from cylinder. Use a check valve to prevent reverse flow into cylinder, or an increase in pressure, or an increased discharge rate. Compressed gas cylinders must not be refilled except by a qualified producer of gas. Shipment of the compressed gas cylinder which has not been filled by the owner or with the owner's consent, is a violation of federal law. Do not mix with air for leak testing or use with air for any purpose above atmospheric pressure.

**STORAGE :** Never expose cylinders to excessive heat. Cylinders should be stored in a well ventilated area. Storage should not exceed 50°C (122°F) and should be free of oxidizers or corrosive materials.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**EYE/FACE PROTECTION:** Safety glasses or goggles

**RESPIRATORS:** Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

**VENTILATION:** Use hood with forced ventilation and/or local exhaust codes.

**PROTECTIVE GLOVES:** Plastic or rubber

**ADDITIONAL RECOMMENDATIONS:** Safety shoes

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### PHYSICAL DATA

|  |                   |
|--|-------------------|
| <b>BOILING POINT:</b>                  | -24.2°C           |
| <b>FREEZING POINT:</b>                 | -101°C            |
| <b>VAPOR PRESSURE:</b>                 | 4620 torr @ 25°C  |
| <b>SOLUBILITY IN WATER (weight %):</b> | 1.4 g/l           |
| <b>ODOR:</b>                           | Faint hydrocarbon |



**R-416A**

**FORM:** Liquefied gas  
**COLOR:** Clear, colorless  
**VAPOR DENSITY (air = 1.0):** 1.33 g/cm<sup>3</sup> - Liquid

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#### 10. STABILITY AND REACTIVITY

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**CHEMICAL STABILITY:** Material is stable. However, avoid open flames and high temperatures.

**INCOMPATIBILITY WITH OTHER MATERIALS:** None known.

**CONDITIONS TO AVOID:** Do not expose cylinders to temperatures exceeding 50°C, Extreme heat or pressure

**POLYMERIZATION:** Will not occur.

**DECOMPOSITION:** Decomposition products are hazardous.

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#### 11. DISPOSAL CONSIDERATIONS

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**WASTE DISPOSAL:** Comply with Federal, State, and local regulations. Remove to a permitted waste disposal facility or reclaim by distillation.

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#### 12. TRANSPORT INFORMATION

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**US DOT PROPER SHIPPING NAME:** Refrigerant Gases, N.O.S (1-Chloro-1,2,2,2-tetrafluoroethane, 1,1,1,2-Tetrafluoroethane)  
**US DOT HAZARD CLASS:** 2.2  
**US DOT ID NUMBER:** UN1078  
**DOT/IMO LABEL:** Non-Flammable Gas  
**SHIPPING CONTAINERS:** Cylinders, Ton Tanks

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#### 13. DISCLAIMER

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