

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT IDENTIFICATION

Product Identifier: RS-45 (R-434A)

Product use: Refrigerant gas

Chemical Family: Hydrofluorocarbon/Hydrocarbon blend

Supplier name and address:

Refrigerant Services Inc.

15 Williams Ave.

Dartmouth, N.S., B3B 1X3

PH: (902)468-4997 1-866-999-2653

Fax: (902)468-5102

E-mail: info@rscool.com

Manufacturer's name and address:

Refer to Supplier

Emergency Telephone #: n/av

WHMIS CLASS: A,D2

SECTION 2 – HAZARDOUS INGREDIENTS

<u>Ingredients</u>		<u>CAS#</u>	
Pentafluoroethane	(HFC-125)	354-33-6	63.2%
1,1,1-Trifluoroethane	(HFC-143a)	420-46-2	18.0%
1,1,1,2-Tetrafluoroethane	(HFC-134a)	811-97-2	16.0%
Isobutane	(R-600a)	75-28-5	2.8%

SECTION 3 – PHYSICAL DATA

Physical state, odour and appearance: Gas at normal conditions of 25°C and 1 atm.

Colorless liquid and vapor. Odor faint ether like.

Odour threshold: n/av

Specific gravity of vapor (at 25°C, air=1): 3.5

Specific gravity of liquid (at 25°C, water=1): 1.09

Coefficient of water/oil distribution: n/av

Vapour pressure (psig @ 25°C): 157

Boiling point (1 atm): -44.9C (-48.8F)

Melting/freezing point: n/ap

Vapour density @ 25C (kg/cubic meter): 53.1

Volatiles, vol%: 100%

Solubility in water: Insoluble.

SECTION 4 – FIRE AND EXPLOSION DATA

Conditions of flammability: Non-flammable

Means of extinction: n/ap

Sensitivity to mechanical impact/static discharge: not susceptible

Flash point (Method): n/ap

Lower/upper flammable limits (% by volume): n/ap

Auto-ignition temperature: not determined

Extinguishing media: As appropriate for combustibles in area

Hazardous combustion products: may decompose and form toxic gases

Fire fighting procedures: Use self contained breathing apparatus and protective clothing

SECTION 5 – REACTIVITY DATA

Stability: Stable at normal conditions: No decomposition if stored and applied as directed.

Incompatible materials: Strong oxidizing agents, alkali metals, alkaline earth metals, finely divided aluminium.

Conditions of reactivity: It has been reported that industry experience shows that alkali and alkaline earth metals (i.e., sodium, potassium and barium) in their free metallic form may react violently with fluorocarbons. It has been noted that since materials become more reactive when finely ground, metals such as magnesium and aluminium in the powdered form may also react, especially in high temperatures. Avoid conditions where RS-45 may contact open flames or extremely hot metal surfaces as product may decompose to form Hydrogen Fluoride (HF).

Hazardous decomposition products: Hydrogen Fluoride (HF)

SECTION 6 – TOXICOLOGICAL PROPERTIES

Occupational Exposure limits: 1000 ppm (TWA)

Inhalation: RS-45 is relatively non-toxic following acute exposure. Although no long term comprehensive studies have specifically investigated acute overexposure of humans to RS-45, experience indicates the cardiovascular and respiratory are the primary systems affected. Abuse (intentional inhalation) may cause death. Human exposure to high concentrations (e.g. 20%) may cause confusion, lung (respiratory) irritation, tremors and perhaps coma, but these affects are generally short lived and reversible without late after effects when removed to fresh air, LC50 values for rats and mice range from 500,000 to 800,000 ppm (vol.) over varying time periods of 15 minutes to 2 hours. High atmospheric concentrations of RS-45 produce stimulation and then depression and finally asphyxiation.

Eyes/skin contact: Contact of RS-45 vapour should not cause injury. Contact of liquid will result in freezing and frostbite of contacted tissue.

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Ingestion: Not probable. At atmospheric pressure, the liquid RS-45 boils at -44.9°C . Freezing and severe frostbite of contacted tissue will result.

Human poisoning potential: Sniffing of fluorocarbon propellants for their intoxicating effects has produced over 100 deaths. Fluorocarbon exhibit very toxic properties (asphyxiation, cardiac arrhythmias) when sniffed; however, because of variations in response, it is difficult to predict which symptoms will be exhibited following exposure. It is possible that individuals with heart and respiratory disorders may prove especially susceptible.

Chronic effects: None known

Sensitization to material: Product is not known to cause allergies.

Cardiac Sensitization Threshold: 50,000 ppm

Carcinogenic Effects: None known

Synergistic materials: Not Available.

SECTION 7 – FIRST AID MEASURES

Inhalation: Vapour contact – primary route of exposure. If inhaled, remove to fresh air. Keep warm and at rest. If breathing is difficult (laboured), give oxygen. If not breathing, give artificial respiration and check for pulse. At high levels cardiac arrhythmia may occur. If no pulse, start CPR (cardiopulmonary resuscitation). DO NOT give stimulants (adrenaline, epinephrine, or hand held asthma aerosols). Call physician. Keep patient at rest for 24 hours after exposure. No long-term effects are expected.

Skin and/or eyes: Vapour contact – flush with fresh water for at least 20 minutes.

Liquid contact – flush exposed area with lukewarm water or otherwise warm skin slowly. Frostbite is probable. Treat accordingly. Call a physician.

Ingestion: Liquid – Not probable – if ingested however, keep patient calm, if conscious, and get a physician immediately – frostbite is probable, indicated by necrosis of lips and tongue (contacted tissue), blanching of skin, pain, tenderness. Warm skin slowly.

SECTION 8 – PREVENTIVE MEASURES

Spill, leak or release: Keep upwind. Ventilate enclosed spaces until gas is dispersed.. Do not smoke or operate internal combustion engines in immediate vicinity.

Waste disposal: Consult federal, provincial and local regulations for allowed means of disposal.

*****PROTECTIVE EQUIPMENT*****

Respiratory protection: Respiratory protection is not needed if concentrations are controlled. If concentrations exceed TLV 1,000 ppm, use an approved respirator for organic vapour. In very high concentrations, self contained breathing equipment should be used.

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Engineering Controls: Local or mechanical ventilation to keep concentrations below exposure limits.

Protective Gloves: Cloth lined rubber.

Eye Protection: Goggles are recommended. A full face shield if splashing possible.

Other protective equipment: Depending on exposure and on workplace standards.

***** STORAGE AND HANDLING*****

Handling procedures and equipment: Do not breathe vapours. Avoid contact with eyes, skin and clothing. Wear protective clothing. Not for food, drug or cosmetic use. Store and use adequate ventilation. Never use in closed or confined space. RS-45 is shipped and stored as a liquefied compressed gas under pressure.

Storage requirements: Cylinder's to be stored in the upright position in a cool, dry place.

Special shipping instructions: TDG – Refrigerant gases N.O.S.*, class 2.2 UN3163 (refrigerant blend containing: pentafluoroethane, 1,1,1-trifluoroethane, 1,1,1,2-tetrafluoroethane, isobutane mixture)

SECTION 9 – PREPARATION INFORMATION

Prepared by: Refrigerant Services Inc. **Telephone#:** (902) 468-4997

Preparation date: June 14, 2010

Additional notes:

Abbreviations:

N/ap	not applicable
N/av	not available
HF	Hydrogen Fluoride
TCC	Taglibue Closed Cup
TDG	Transportation of Dangerous Goods act and regulations
TLV	Threshold Limit Values
TWA	Time Weighted Average
WHMIS	Workplace Hazardous Materials Safety System

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given 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. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in a process unless specified in the text.

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