



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

R-407A Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-407A

EMERGENCY CONTACT: Chemtrec: 1-800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Difluoroethane (HFC-32)	75-10-5	20
Pentafluoroethane (HFC-125)	354-33-6	40
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	40

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-407A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME, NTP STATUS, IARC STATUS, OSHA LIST

No ingredients listed in this section

4. FIRST AID MEASURES



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention. Do not give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Gas, not applicable per DOT regulations

FLASH POINT METHOD: Not applicable

AUTOIGNITION TEMPERATURE: <750°C

UPPER FLAME LIMIT (volume % in air): None*

LOWER FLAME LIMIT (volume % in air): None*

*Based on ASHRAE Standard 34 with match ignition

FLAME PROPAGATION RATE (solids): Not applicable

OSHA FLAMMABILITY CLASS: Not applicable

EXTINGUISHING MEDIA: Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS: R-407A is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. 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).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES IN CASE OF SPILL OR OTHER RELEASE:

(Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

return until air has been tested and determined safe, including low-lying areas. Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.) Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders. R-407A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

STORAGE RECOMMENDATIONS: Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION: Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

RESPIRATORY PROTECTION: None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH-approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS: Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Difluoroethane	None	None	*1000 ppm TWA (8hr)
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

Hydrogen Fluoride: ACGIH TLV: 3 ppm ceiling

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, colorless liquefied gas

PHYSICAL STATE: Gas at ambient temperatures

MOLECULAR WEIGHT: 120

CHEMICAL FORMULA: CHF_2CF_3 , CH_3CF_3 , CH_2FCF_3

ODOR: Faint ethereal odor

SPECIFIC GRAVITY (water = 1.0): 1.17 @ 20°C (68°F)

SOLUBILITY IN WATER (weight %): Insoluble

pH: Not applicable

BOILING POINT: -49.9°F to -38.0°F, -45.5°C to -38.9°C (boiling range)

FREEZING POINT: Not Determined

VAPOR PRESSURE (mmHg at 20°C): 8250

VAPOR DENSITY (air = 1.0): 2.54 AT BUBBLE POINT TEMPERATURE

EVAPORATION RATE: >1

COMPARED TO: CC14= 1

% VOLATILES: 100

FLASH POINT: Not applicable

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID): The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES: (Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

HFC-32: LC50: 4 hr. (rat) - > 520,000 ppm / Cardiac Sensitization threshold (dog) 250,000 ppm

HFC-125: LC50: 4hr. (rat) - > 800,000 ppm / Cardiac Sensitization threshold (dog) > 75,000 ppm

HFC-134a: LC50: 4hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) > 75,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

HFC-32: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - >200,000 ppm / Chronic NOEL – 250,000 ppm

HFC-125: Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Subchronic inhalation (rat) NOEL - >50,000 ppm / Chronic NOEL – 10,000 ppm

HFC-134a: Teratogenic NOEL (rat and rabbit) – 40,000 ppm

Subchronic inhalation (rat) NOEL – 50,000 ppm / Chronic NOEL – 10,000 ppm

OTHER DATA:

Not active in two genetic studies

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADATION: HFC 32 and HFC 134a decompose comparatively rapidly in the lower atmosphere (troposphere) while HFC 125 decomposes slowly in the lower atmosphere (troposphere). Estimated atmospheric lifetimes are 4.9, 29 and 14 years for HFC 32, HFC 125 and HFC 134a, respectively. Products of decomposition will be highly dispersed and hence have a very low concentration. Components are not significant contributors to photochemical smog and are not considered to be VOCs. None of the components are considered an ozone-depleting chemical.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Discarded product is not a hazardous waste under RCRA, 40 CFR 261; however, R-407A should be recycled, reclaimed or destroyed whenever possible.

EFFECT ON EFFLUENT TREATMENT: Discharges of the product will enter the atmosphere and will not result in long-term aqueous contamination.

REFRIGERATION APPLICATION: Subject to "no venting" regulations of Sections 608 and 609 of the Clean Air Act during the service or disposal of equipment.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Refrigerant gas R 407A

US DOT HAZARD CLASS: 2.2



THE BEST FOR LESS

8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

US DOT PACKING GROUP: Not applicable

US DOT ID NUMBER: UN3338

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Components listed on the TSCA inventory

OTHER TSCA ISSUES: None

SARA TITLE III / CERCLA

“Reportable Quantities” (RQs) and/or “Threshold Planning Quantities” (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
------------------------	-------------------------------	---------------------------

No ingredients listed in this section

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: IMMEDIATE PRESSURE

SARA 313 TOXIC CHEMICALS: The following ingredients are SARA 311 “Toxic Chemicals”. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
------------------------	----------------

No ingredients listed in this section

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
------------------------	-----------------	----------------

No ingredients listed in this section

ADDITIONAL REGULATORY INFORMATION:

R-407A is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: Contains Pentafluoroethane (HFC-125), 1,1,1-trifluoroethane, tetrafluoroethane, greenhouse gases which may contribute to global warming. Do not vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered.



8105 Anderson Road, Tampa, FL 33634
Phone: (803) 443-0757 Fax: (813) 886-7900
www.iGasUSA.com

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

EU – EINECS # 2065578 – HFC-125

2069965 – HFC-143a

223770 – HFC-134a

16. OTHER INFORMATION

HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0

NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0

ANSI / ASHRAE 34 Safety Group – A1

17. DISCLAIMER

BMP USA, Inc. believes that the information and recommendations contained herein (including data and statements are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other methods of use of the product and of the information referred to herein are beyond the control of BMP USA, Inc. BMP USA, Inc. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.