

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: R-407A

Intended Use of the Product

Refrigerant

Name, Address, and Telephone of the Responsible Party

Company

ICOR International

10640 E 59th St.

Indianapolis, IN 46236

800-497-6805 (Monday-Friday, 7:30 am-4:30 pm ET)

Emergency Telephone Number

Emergency number : CHEMTREC 800-424-9300 (24 Hours/Day, 7 Days/Week)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Simple Asphyxiant

Liquefied gas H280

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)

:



GHS04

Signal Word (GHS-US)

: Warning

Hazard Statements (GHS-US)

: H280 - Contains gas under pressure; may explode if heated

May displace oxygen and cause rapid suffocation

Precautionary Statements (GHS-US)

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

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Liquid contact with eyes or skin may cause frostbite.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances: Mixture

Name	Product identifier	% (w/w)	Classification (GHS-US)
1,1,1,2-Tetrafluoroethane (HFC-134a)	(CAS No) 811-97-2	40	Simple Asphyxiant Liquefied gas, H280
Pentafluoroethane (HFC-125)	(CAS No) 354-33-6	40	Simple Asphyxiant Liquefied gas, H280
Difluoromethane (HFC-32)	(CAS No) 75-10-5	20	Simple Asphyxiant Liquefied gas, H280

Full text of H-phrases: see section 16

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SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Rinse immediately with plenty of lukewarm water. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

Ingestion: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Vapors are heavier than air and may cause asphyxia by reduction of the oxygen content.

Inhalation: May cause respiratory irritation.

Skin Contact: May cause skin irritation. Liquid contact may cause frostbite.

Eye Contact: May cause eye irritation.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: None known.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: R-407A is not flammable at ambient temperatures and atmospheric pressure. R-407A can become combustible with high concentrations of air at elevated pressure and/or temperature and in the presence of an ignition source. This substance can also become combustible in an oxygen enriched environment (oxygen concentrations greater than that in air). For example, do not mix R-407A with air under pressure for leak detection purposes.

Explosion Hazard: Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity: Hazardous reactions will not occur under normal conditions.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Wear self-contained breathing apparatus(SCBA) and neoprene gloves.

Hazardous Combustion Products: Carbon oxides (CO, CO₂). Halogenated hydrocarbons. Hydrogen Fluoride (HF).

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing vapors. Remove ignition sources.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

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For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Ventilate area. Ensure that oxygen content is > 19.5%

Environmental Precautions

Avoid release to the environment.

Methods and Material for Containment and Cleaning Up

For Containment: Ventilate area. Gas evaporates quickly.

Methods for Cleaning Up: Isolate area until gas has dispersed. Avoid accumulation of vapors in confined areas.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Ruptured cylinders may rocket.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Chlorine.

Storage Area: Store in a well-ventilated place. Protect from sunlight and do not expose to temperatures exceeding 50 °C .

Specific End Use(s)

Refrigerant.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)		
AIHA WEEL	OEL 8 hr TWA	1000 ppm
Pentafluoroethane (HFC125) (354-33-6)		
AIHA WEEL	OEL 8 hr TWA	1000 ppm
Difluoromethane (HFC-32) (75-10-5)		
AIHA WEEL	OEL 8 hr TWA	1000 ppm

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing.



Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Impervious butyl rubber gloves.

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear suitable protective clothing.

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Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

Consumer Exposure Controls: Do not eat, drink or smoke during use

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Liquefied Gas
Appearance	: Colorless
Odor	: Slightly ethereal
Odor Threshold	: Not available
pH	: Neutral
Evaporation Rate	: >1 Compared To: CC14 = 1
% Volatiles:	: 100
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: -45.0 °C (-49.0 °F)
Flash Point	: Does Not Flash
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not Available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: 12,531 hPa at 25°C (77° F)
Vapor Density	: 3.2 @ 25° C (77° F) and 1013 hPa(Air=1.0)
Density - Liquid	: Not available
Specific Gravity	: 1.15 @ 25° C (77° F)
Water Solubility	: Not available
Partition coefficient: n-octanol/water	: Not available
% Volatile	: 100%
Viscosity	: Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions.

Chemical Stability: Stable under recommended handling and storage conditions (see section 7).

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Ignition sources. Incompatible materials. Do not mix with oxygen or air above atmospheric pressure. Can form a combustible mixture with air at pressures above atmospheric pressure.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Potassium, calcium, powdered metals, finely divided aluminum, magnesium, zinc.

Hazardous Decomposition Products: In case of fires hazardous decomposition may occur - Halogenated hydrocarbons. Hydrogen Fluoride (HF). Carbon monoxide and carbon dioxide.

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SECTION 11: TOXICOLOGICAL INFORMATION

1,1,1,2-Tetrafluoroethane (HFC-134a)

Inhalation 4 h LC50 :	> 567000 ppm , Rat
Inhalation No Observed :	40000 ppm , Dog
Adverse Effect	Cardiac sensitization
Concentration	
Inhalation Low Observed :	: 80000 ppm , Dog
Adverse Effect	Cardiac sensitization
Concentration (LOAEC)	
Skin irritation :	No skin irritation, Rabbit
Eye irritation :	No eye irritation, Rabbit
Skin sensitization :	Does not cause skin sensitisation., Guinea pig Does not cause respiratory sensitisation., Rat
Repeated dose toxicity :	Inhalation Rat gas NOAEL: 50000, No toxicologically significant effects were found.
Carcinogenicity :	Not classifiable as a human carcinogen.
Mutagenicity :	Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Reproductive toxicity :	No toxicity to reproduction No effects on or via lactation Animal testing showed no reproductive toxicity.
Teratogenicity :	Animal testing showed no developmental toxicity.
Further information :	Cardiac sensitisation threshold limit : 334000 mg/m3

Pentafluoroethane (HFC-125)

Inhalation 4 h LC50 :	> 800000 ppm , Rat
Inhalation No Observed:	100000 ppm , Dog
Adverse Effect	Cardiac sensitization
Concentration	
Inhalation Low Observed:	75000 ppm , Dog
Adverse Effect	Cardiac sensitization
Concentration (LOAEC)	
Skin sensitization :	Does not cause respiratory sensitisation., human

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Pentafluoroethane (HFC-125) – continued:

Repeated dose toxicity :	Inhalation Rat - gas NOAEL: > 50000, No toxicologically significant effects were found.
Carcinogenicity :	Not classifiable as a human carcinogen.
Mutagenicity :	Animal testing did not show any mutagenic effects. Evidence suggests this substance does not cause genetic damage in cultured mammalian cells. Did not cause genetic damage in cultured bacterial cells.
Reproductive toxicity :	No toxicity to reproduction Animal testing showed no reproductive toxicity.
Teratogenicity :	Animal testing showed no developmental toxicity.
Further information :	Cardiac sensitisation threshold limit : 490000 mg/m3

Difluoromethane (HFC-32)

Inhalation 4 h LC50 :	> 520000 ppm , Rat
Inhalation Low Observed: Adverse Effect Concentration (LOAEC)	> 350000 ppm , Dog Cardiac sensitization
Inhalation No Observed: Adverse Effect Concentration	350000 ppm , Dog Cardiac sensitization
Skin irritation :	No skin irritation, Not tested on animals Not expected to cause skin irritation based on expert review of the properties of the substance.
Eye irritation :	No eye irritation, Not tested on animals Not expected to cause eye irritation based on expert review of the properties of the substance.
Skin sensitization :	Does not cause skin sensitisation., Not tested on animals Not expected to cause sensitization based on expert review of the properties of the substance.

There are no reports of human respiratory sensitization.

Repeated dose toxicity :	Inhalation Rat No toxicologically significant effects were found.
Mutagenicity :	Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects

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Reproductive toxicity : No toxicity to reproduction
Animal testing showed no reproductive toxicity.
Information given is based on data obtained from similar substances.

Teratogenicity : Animal testing showed no developmental toxicity.

Further information : Cardiac sensitisation threshold limit : > 735000 mg/m3

Carcinogenicity:

The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12: ECOLOGICAL INFORMATION

Aquatic Toxicity:

1,1,1,2-Tetrafluoroethane (HFC-134a)

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 450 mg/l
96 h ErC50 : Algae 142 mg/l
Information given is based on data obtained from similar substances.
72 h NOEC : Pseudokirchneriella subcapitata (green algae) 13.2 mg/l
Information given is based on data obtained from similar substances.
48 h EC50 : Daphnia magna (Water flea) 980 mg/l

Pentafluoroethane (HFC-125)

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 450 mg/l
Information given is based on data obtained from similar substances.
96 h ErC50 : Algae 142 mg/l
Information given is based on data obtained from similar substances.
72 h NOEC : Pseudokirchneriella subcapitata (green algae) 13.2 mg/l
Information given is based on data obtained from similar substances.
48 h EC50 : Daphnia magna (Water flea) 980 mg/l
Information given is based on data obtained from similar substances.

Difluoromethane (HFC-32)

96 h LC50 : Fish 1,507 mg/l
96 h EC50 : Algae 142 mg/l
48 h EC50 : Daphnia (water flea) 652 mg/l
30 d : NOEC Fish (unspecified species) 65.8 mg/l

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Environmental:

Difluoromethane (HFC-32)

Biodegradability : 5 % OECD Test Guideline 301D
Not readily biodegradable.

Other Adverse Effects:

This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling. This product contains 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.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations. This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling. Contact a certified reclaimer for recovery/reclamation of this product.

Ecology – Waste Materials: Avoid release to the environment. Recover, reclaim or recycle.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : Refrigerant gas R 407A
Hazard Class : 2.2
Identification Number : UN3338
Label Codes : 2.2
ERG Number : 126



14.2 In Accordance with IMDG

Proper Shipping Name : Refrigerant gas R 407A
Hazard Class : 2.2
Identification Number : UN3338
Label Codes : 2.2
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V



14.3 In Accordance with IATA

Proper Shipping Name : Refrigerant gas R 407A
Identification Number : UN3338
Hazard Class : 2.2
Label Codes : 2.2
ERG Code (IATA) : 2L



14.4 In Accordance with TDG

Proper Shipping Name : Refrigerant gas R 407A
Hazard Class : 2.2
Identification Number : UN3338
Label Codes : 2.2



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SECTION 15: REGULATORY INFORMATION

US Federal Regulations

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U.S. Toxic Substances Control Act (TSCA) –All components listed on TSCA Inventory	
SARA Section 302 Title III/CERCLA – No component of this product is subject to the reporting requirements of SARA III Section 302.	
SARA Section 313 Hazard Classes - No component of this product is subject to the reporting requirements of SARA III Section 313.	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard
R-407A	
EPA Clean Air Act	This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82

US State Regulations

PA Right to Know Regulated Chemical(s): Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Difluoromethane

NJ Right to Know Regulated Chemical(s): Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Difluoromethane

California Prop. 65 : Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

Canadian Regulations

R-407A - Act (CEPA). Domestic Substances List (DSL): All components of this product are on the Canadian DSL.	
WHMIS Classification	Class A - Compressed Gas
	

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

CURRENT ISSUE DATE: May, 2015

PREVIOUS ISSUE DATE: N/A

OTHER INFORMATION: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

HMIS Classification: HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
A N S I / ASHRAE 34 Safety Group – A1

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Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

GHS Full Text Phrases:

H280	Contains gas under pressure; may explode if heated
Liquefied gas	Gases under pressure Liquefied gas
Simple Asphyxiant	Simple Asphyxiant

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.