

## SECTION 1: IDENTIFICATION

### Product Identifier

**Product Form:** Mixture

**Product Name:** R-404A

### 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-Trifluoroethane (HFC-143a)	(CAS No) 420-46-2	52	Simple Asphyxiant Liquefied gas, H280
Pentafluoroethane (HFC-125)	(CAS No) 354-33-6	44	Simple Asphyxiant Liquefied gas, H280
1,1,1,2-Tetrafluoroethane (HFC-134a)	(CAS No) 811-97-2	4	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-404A is not flammable at ambient temperatures and atmospheric pressure. R-404A 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-404A 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.

**Hazardous Combustion Products:** Carbon oxides (CO, CO<sub>2</sub>). 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.

#### For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection.

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**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

<b>1,1,1-Trifluoroethane (HFC-143a) (420-46-2)</b>		
AIHA WEEL	OEL 8 hr TWA	1000 ppm
<b>Pentafluoroethane (HFC125) (354-33-6)</b>		
AIHA WEEL	OEL 8 hr TWA	1000 ppm
<b>1,1,1,2-Tetrafluoroethane (HFC-134a) (811-97-2)</b>		
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.

**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

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### 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 <b>Compared To:</b> CC14 = 1
% Volatiles:	: 100
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: -47.8 °C (-54.0 °F)
Flash Point	: Not available
Auto-ignition Temperature	: > 750 °C
Decomposition Temperature	: > 250 °C
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: @ 21.1 °C (70 °F) 182.9 psia @ 54.4 °C (129.9 °F) 370.9 psia
Vapor Density	: 3.43 (Air = 1.0)
Density	: 1.08g/cm <sup>3</sup> at 21.1 °C
Specific Gravity	: Not available
Solubility	: Not available
Partition coefficient: n-octanol/water	: Log Pow: 1.06 Test substance 1,1,1- Tetrafluorethane
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.

### SECTION 11: TOXICOLOGICAL INFORMATION

#### Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Not classified

**Serious Eye Damage/Irritation:** Not classified

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Teratogenicity:** Not available

**Carcinogenicity:** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Not classified

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**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** May cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** May cause skin irritation. Liquid contact may cause frostbite.

**Symptoms/Injuries After Eye Contact:** May cause eye irritation.

**Symptoms/Injuries After Ingestion:** Ingestion is likely to be harmful or have adverse effects.

**Chronic Symptoms:** None expected under normal conditions of use.

### Information on Toxicological Effects - Ingredient(s)

#### IMMEDIATE (ACUTE) EFFECTS:

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

**HFC-143a:** LC50 : 4hr. (rat) - > 540,000 ppm / Cardiac Sensitization threshold (dog) > 250,000 ppm

**HFC-134a:** LC50 : 4hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) > 80,000 ppm

#### DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

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

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

**HFC-143a:** Teratogenic NOEL (rat and rabbit) – 50,000 ppm

Sub chronic inhalation (rat) NOEL - > 50,000 ppm

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

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

**CARCINOGENICITY:** None of the ingredients of this product are listed on the NTP, IARC, or OSHA.

## SECTION 12: ECOLOGICAL INFORMATION

**Toxicity:** Not classified

#### **Aquatic Toxicity:**

Accumulation in aquatic organisms is unlikely due to its gaseous state at ambient temperatures and atmospheric pressure.

**Persistence and Degradability:** Not available

**Mobility in Soil:** Not available

#### **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.

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### SECTION 14: TRANSPORT INFORMATION

#### 14.1 In Accordance with DOT

Proper Shipping Name : Refrigerant gas R 404A  
Hazard Class : 2.2  
Identification Number : UN3337  
Label Codes : 2.2  
ERG Number : 126



#### 14.2 In Accordance with IMDG

Proper Shipping Name : Refrigerant gas R 404A  
Hazard Class : 2.2  
Identification Number : UN3337  
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 404A  
Identification Number : UN3337  
Hazard Class : 2.2  
Label Codes : 2.2  
ERG Code (IATA) : 2L



#### 14.4 In Accordance with TDG

Proper Shipping Name : Refrigerant gas R 404A  
Hazard Class : 2.2  
Identification Number : UN3337  
Label Codes : 2.2



### SECTION 15: REGULATORY INFORMATION

#### US Federal Regulations

R-404A	
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-404A	
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

**California Proposition 65** – This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproduction harm.

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### Canadian Regulations

**R-404A - 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:** March, 2015

**PREVIOUS ISSUE DATE:** October 2006

**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 ANSI /  
ASHRAE 34 Safety Group – A1

#### 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

ICOR International  
10640 E 59th St.  
Indianapolis, IN 46236  
800-497-6805

*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.*

North America GHS US 2012 & WHMIS