

Enviro-Safe R600a Refrigerant

1 PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Enviro-Safe R600a Refrigerant
Common Name: Isobutane
SDS Number: 8050
Version: 1.0
Product Use: Refrigerant for R600a systems

Supplier Details: Enviro-Safe Refrigerants, Inc.
 400 Hanna Dr.
 Pekin, IL 61554

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2 HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):
 Physical, Flammable Gases, 1
 Physical, Gases Under Pressure, Liquefied Gas

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: **DANGER**

GHS Hazard Pictograms:



GHS Hazard Statements:

H220 - Extremely flammable gas
 H280 - Contains gas under pressure; may explode if heated

GHS Precautionary Statements:

P210 - Keep away from heat/sparks/open flames/hot surfaces.
 P410 + P403 - Protect from sunlight. Store in a well-ventilated place.

3 COMPOSITION/INFORMATION OF INGREDIENTS

Chemical Ingredients:		
CAS#	%	Chemical Name:
75-28-5	100%	Isobutane

4 FIRST AID MEASURES

Inhalation: When symptoms occur: go to open air or well ventilated area. Immediately call a POISON CENTER or doctor/physician.
Skin Contact: If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.
Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

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Ingestion: Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms/Injuries: Gas can be toxic as simple asphyxiant by displacing oxygen from the air. Contact with product may cause cold burns or frostbite.

Symptoms/Injuries After Inhalation: Gas can be toxic as a simple asphyxiant by displacing oxygen from the air.

Symptoms/Injuries After Skin Contact: May cause frostbite. May cause skin irritation.

Symptoms/Injuries After Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

Symptoms/Injuries After Ingestion: Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

5	FIRE FIGHTING MEASURES
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Flammability: 1.8 - 8.4 vol%

Autoignition Temp: 460°C (860°F)

LEL: 1.8

UEL: 8.4

5.1. Extinguishing Media

Suitable Extinguishing Media: Dry powder, foam, carbon dioxide, alcohol-resistant foam.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy water stream may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Flammable liquid.

Explosion Hazard: Heat may build pressure, rupturing closed containers, spreading fire and increasing risks of burns and injuries.

Reactivity: May explode if heated. Reacts with strong oxidants causing fire and explosion hazard.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution fighting any chemical fire.

Firefighting Instructions: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

6	ACCIDENTAL RELEASE MEASURES
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6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing (vapor, mist, spray). Use special care to avoid static electric charges. Keep away from heat, sparks, open flames, hot surfaces. No smoking.

6.1.1. For Non-emergency Personnel

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

Emergency Procedures: Evacuate unnecessary personnel. Eliminate ignition sources.

6.1.2. For Emergency Responders

Protective Equipment: Equip clean up crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Eliminate ignition sources. Ventilate area. Evacuate unnecessary personnel.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

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7	HANDLING AND STORAGE
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Handling Precautions:

7.1. Precautions for Safe Handling
 Precautions for Safe Handling: Personnel should be trained to regularly inspect equipment such as pumps, hoses, and valves. Do not breathe gas. Ensure there is adequate ventilation. Close valve after each use and when empty. Open valve slowly to avoid pressure shock.
 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 again when leaving work.

Storage Requirements:

7.2. Conditions for Safe Storage, Including Any Incompatibilities
 Technical Measures: Comply with applicable regulations. Keep at temperatures below 52 °C/125 °F.
 Storage Conditions: Store in a dry, cool and well-ventilated place. Store locked up.
 Incompatible Products: Heat sources. Oxidizers.

7.3. Specific End Use(s): Refrigerant

8	EXPOSURE CONTROLS/PERSONAL PROTECTION
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Engineering Controls: Alarm detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment: HMIS PP, F | Safety Glasses, Gloves, Apron, Dust Respirator
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Personal protective equipment:

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 480 min Material tested:Vitoject (KCL 890 / Aldrich Z677698, Size M)

Splash protection: Material: Nitrile rubber Minimum layer thickness: 0.4 mm Break through time: 60 min Material tested:Camatril (KCL 730 / Aldrich Z677442, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection: impervious clothing, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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Components with workplace control parameters

TWA 1,000 ppm TWA 800 ppm 1,900 mg/m3	USA. ACGIH Threshold Limit Values (TLV) Central Nervous System impairment Cardiac sensitization USA. NIOSH Recommended Exposure Limits
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Also see specific listing for n-Butane.

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PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless	Odor:	Sweet
Physical State:	Gas	Molecular Formula:	58 g/mol
Odor Threshold:	No data available	Solubility:	Water: 54 mg/l
Spec Grav./Density:	No data available	Freezing/Melting Pt.:	-159°C (-254°F)
Viscosity:	No data available	Flash Point:	-83.15°C (-117.7°F)
Boiling Point:	-11.7°C (10.94°F)	Vapor Density:	> 1 (Heavier than air)
Flammability:	1.8 - 8.4 vol%	Auto-Ignition Temp:	460°C (860°F)
Partition Coefficient:	No data available	UFL/LFL:	1.8/8.4
Vapor Pressure:	300 kPa		
pH:	No data available		
Evap. Rate:	No data available		
Decomp Temp:	No data available		

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STABILITY AND REACTIVITY

Reactivity:	Contains gas under pressure; may explode if heated. Reacts with oxidants causing fire and explosion hazard.
Chemical Stability:	Stable under recommended handling and storage conditions (see Section 7).
Conditions to Avoid:	Direct sunlight. Extremely high or low temperatures. Open flame. Heat. Sparks.
Materials to Avoid:	Heat. Strong oxidizers.
Hazardous Decomposition:	Carbon oxides (CO, CO ₂).
Hazardous Polymerization:	Will not occur.

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TOXICOLOGICAL INFORMATION

Isobutane cas#:(75-28-5) [100%]

Information on toxicological effects

Acute toxicity: Oral LD50 no data available

Inhalation LC50

Dermal LD50

Other information on acute toxicity

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity - single exposure (Globally Harmonized System): no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System): no data available

Aspiration hazard: no data available

Potential health effects: Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Ingestion May be harmful if swallowed.

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Skin May be harmful if absorbed through skin. May cause skin irritation. Eyes May cause eye irritation.

Signs and Symptoms of Exposure: narcosis, Dermatitis

Synergistic effects: no data available

Additional Information: RTECS: TZ4300000

12	ECOLOGICAL INFORMATION
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Isobutane cas#:(75-28-5) [100%]

Information on ecological effects

Toxicity: no data available

Persistence and degradability: no data available

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

13	DISPOSAL CONSIDERATIONS
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Isobutane cas#:(75-28-5) [100%]

Waste treatment methods

Product: Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

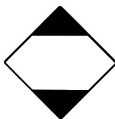
Contaminated packaging: Dispose of as unused product.

14	TRANSPORT INFORMATION
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ID8000, Consumer commodity, 9

14.1. In Accordance with DOT

Consumer Commodity, ORM-D



14.2. In Accordance with IMDG

Proper Shipping Name: PETROLEUM GASES, LIQUEFIED

Hazard Class: 2.1

Identification Number: UN1075

Label Codes: 2.1



EmS-No. (Fire): F-D

EmS-No. (Spillage): S-U

14.3. In Accordance with IATA

Proper Shipping Name: PETROLEUM GASES, LIQUEFIED

Identification Number: UN1075

Hazard Class: 2

Label Codes: 2.1



ERG Code (IATA): 10L

15	REGULATORY INFORMATION
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[%] RQ (CAS#) Substance - Reg Codes

[100%] Isobutane (75-28-5) MASS, PA, TSCA

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This product does not contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Regulatory Code Legend

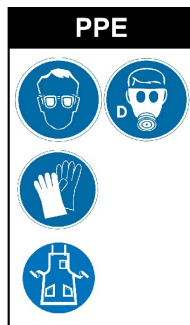
MASS = MA Massachusetts Hazardous Substances List

PA = PA Right-To-Know List of Hazardous Substances

TSCA = Toxic Substances Control Act

16	OTHER INFORMATION
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HMIS	
HEALTH	<input type="checkbox"/> <input type="checkbox"/>
FLAMMABILITY	<input type="checkbox"/>
PHYSICAL HAZARD	<input type="checkbox"/>
PERSONAL PROTECTION	F



Revision Date:

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