R-600a Isobutane

Safety Data Sheet

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SECTION 1: Identification

1.1. Identification

Product form : Substance

Substance name : R-600a Isobutane

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Refrigerant Gas

1.3. Supplier

FluoroFusion
3950 Powhatan Road
Clayton, NC 27520
Phone: 919-827-4135
info@fluorofusion.com
www.fluorofusion.com

1.4. Emergency telephone number

Emergency number : Contact Chemtrec at 1-800-424-9300 (24 hours)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Flammable gases Category 1	H220	Extremely flammable gas
Gases under pressure Compressed gas	H280	Contains gas under pressure; may explode if heated

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statements (GHS-US) : P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - Eliminate all ignition sources if safe to do so
P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards which do not result in classification

Skin contact with rapidly evaporating liquid may cause frostbite.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS-US classification
Isobutane	(CAS No) 75-28-5	100	Flam. Gas 1, H220 Compressed gas, H280

Full text of hazard classes and H-phrases: See Section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

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 (show the product label where possible).

First-aid measures after inhalation : Allow victim to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact	:	Warm areas gradually and get medical attention if there is ecvidence of tissue damage due to frostbite. Flush area with plenty of water.
First-aid measures after eye contact	:	Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist. Obtain immediate medical attention if frostbite occurs.
First-aid measures after ingestion	:	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms	:	No additional information available
Symptoms/injuries	:	Not expected to present a significant hazard under anticipated conditions of normal use.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	:	Dry powder. Water.
Unsuitable extinguishing media	:	Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard	:	Extremely flammable gas.
Explosion hazard	:	May form flammable/explosive vapor-air mixture.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	:	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
Protection during firefighting	:	Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Remove ignition sources. Use special care to avoid static electric charges. Eliminate every possible source of ignition. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures	:	Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	:	Equip cleanup crew with proper protection.
Emergency procedures	:	Ventilate area.

6.2. Environmental precautions

Prevent fire-fighting water from entering environment

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	:	Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	:	Handle empty containers with care because residual vapors are flammable. Flammable gas.
Precautions for safe handling	:	Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No smoking.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Proper grounding procedures to avoid static electricity should be followed.
Storage conditions	:	Keep only in the original container in a cool, well ventilated place. Keep container closed when not in use. Keep in fireproof place.
Incompatible products	:	Strong bases. Strong acids.
Incompatible materials	:	Sources of ignition. Direct sunlight. Heat sources.
Storage area	:	Store in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isobutane (75-28-5)		
OSHA	OSHA PEL (ppm)	1000 ppm (explosion hazard)

8.2. Appropriate engineering controls

No additional information available

8.3. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Not typically required. In those cases where exposures exceed occupational control limits a NIOSH approved respirator is recommended. Wear appropriate mask

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquefied compressed gas (gas at ambient temperature)

Color : Colorless

Odor : Sweet Petroleum Odor

Odor threshold : No data available

pH : No data available

Melting point : -160 °C

Freezing point : No data available

Boiling point : -11.72 °C

Flash point : -85 °C

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : > 1

Flammability (solid, gas) : Extremely flammable gas

Vapor pressure : 2.11 atm

Relative vapor density at 20 °C : 2.006

Relative density : 0.557

Specific gravity / density : 0.0025 g/cm³

Solubility in water : 0.008%

Log Pow : 2.8

Auto-ignition temperature : 460 °C

Decomposition temperature : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : No data available

Explosion limits : LEL: 1.8 vol %
UEL: 8.4 vol %

Explosive properties : No data available

Oxidizing properties : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not reactive under normal conditions

10.2. Chemical stability

Extremely flammable gas.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Products of combustion.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	:	Not classified
Skin corrosion/irritation	:	Not classified
Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity – single exposure	:	Not classified
Specific target organ toxicity – repeated exposure	:	Not classified
Aspiration hazard	:	Not classified
Potential Adverse human health effects and symptoms	:	Based on available data, the classification criteria are not met.
Symptoms/injuries	:	Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

R-600a Isobutane	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

R-600a Isobutane	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations	:	Dispose in a safe manner in accordance with local, state, and federal regulations.
Additional information	:	Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials	:	Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description	:	UN1969 Isobutane, 2.1
UN-No.(DOT)	:	UN1969
Proper Shipping Name (DOT)	:	Isobutane
Class (DOT)	:	2.1 - Class 2.1 - Flammable gas 49 CFR 173.115
Hazard labels (DOT)	:	2.1 - Flammable gas

DOT Packaging Non Bulk (49 CFR 173.xxx)	:	304
DOT Packaging Bulk (49 CFR 173.xxx)	:	314;315
DOT Special Provisions (49 CFR 172.102)	:	19 - For domestic transportation only, the identification number UN1075 may be used in place of the identification number specified in column (4) of the 172.101 table. The identification number used must be consistent on package markings, shipping papers and emergency response information. T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	306
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	150 kg
DOT Vessel Stowage Location	:	E - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other	:	40 - Stow ‘‘clear of living quarters’’
Emergency Response Guide (ERG) Number	:	115
Other information	:	No supplementary information available.

TDG

Not applicable

Transport by sea

Transport document description (IMDG)	:	UN 1969 ISOBUTANE, 2.1
UN-No. (IMDG)	:	1969
Proper Shipping Name (IMDG)	:	ISOBUTANE
Class (IMDG)	:	2 - Gases
Limited quantities (IMDG)	:	0

Air transport

Transport document description (IATA)	:	UN 1969 ISOBUTANE, 2.1
UN-No.(IATA)	:	1969
Proper Shipping Name (IATA)	:	ISOBUTANE
Class (IATA)	:	2

SECTION 15: Regulatory information

15.1. US Federal regulations

R-600a Isobutane	
SARA Section 311/312 Hazard Classes	Flammable Gas under pressure

Isobutane (75-28-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Isobutane (75-28-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Isobutane (75-28-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Isobutane (75-28-5)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican national Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Other information : None.

Full text of H-phrases:

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

SDS US (GHS HazCom 2012)

The information provided in this 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 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 any process, unless specified in the text.