

1. Identification

Product identifier	Isobutane (4175-30, 4175-30C)	
Other means of identification	Not available.	
Recommended use	Refrigerant	
Recommended restrictions	None known.	
Manufacturer information	Nu-Calgon 2611 Schuetz Road St. Louis, MO 63043 US Phone: 314-469-7000 / 800-554-5499 Emergency Phone: 1-800-424-9300 (CHEMTREC)	
Supplier	See above.	

2. Hazard identification

Physical hazards	Flammable gases	Category 1
	Gases under pressure	Liquefied gas
	Simple asphyxiants	Category 1
Health hazards	Not classified.	
Environmental hazards	Not classified.	
WHMIS 2015 defined hazards	Not classified	

Label elements



Signal word	Danger
Hazard statement	Extremely flammable gas. Contains refrigerated gas; may cause cryogenic burns or injury. May displace oxygen and cause rapid suffocation.
Precautionary statement	
Prevention	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Wear cold insulating gloves and either face shield or eye protection. Wear respiratory protection.
Response	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical attention.
Storage	Store in a well-ventilated place.
Disposal	Dispose of container in accordance with local, regional, national and international regulations.
WHMIS 2015: Health Hazard(s) not otherwise classified (HNOC)	None known
WHMIS 2015: Physical Hazard(s) not otherwise classified (PHNOC)	None known
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/Information on ingredients

Substance

Chemical name	Common name and synonyms	CAS number	%
Isobutane		75-28-5	100

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory tract irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.
Skin contact	Clothing frozen to the skin should be thawed before being removed. In case of contact with liquefied gas, thaw frosty parts with lukewarm water. Do not rub affected area. Get medical attention immediately.
Eye contact	Immediately flush with cool water. Remove contact lenses, if applicable, and continue flushing for 15 minutes. Obtain medical attention immediately.
Ingestion	Not likely, due to the form of the product. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious or is convulsing. Obtain medical attention.
Most important symptoms/effects, acute and delayed	Headache. Dizziness. Fatigue. Nausea, vomiting. Very high exposure can cause suffocation from lack of oxygen. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Do not extinguish a leaking gas fire unless leak can be stopped. In case of fire: Stop leak if safe to do so. Do not move cargo or vehicle if cargo has been exposed to heat. Move containers from fire area if you can do so without risk. Do not direct water at source of leak or safety devices as icing may occur. Use water spray to cool unopened containers. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Cool containers exposed to flames with water until well after the fire is out.
General fire hazards	Extremely flammable gas. Contents under pressure. Pressurized container may explode when exposed to heat or flame.
Hazardous combustion products	May include and are not limited to: Oxides of carbon.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	In the event of a leak evacuate all personnel until ventilation can restore oxygen concentrations to safe levels. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Refer to attached safety data sheets and/or instructions for use. Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors or divert vapor cloud drift. Isolate area until gas has dispersed. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination.
Environmental precautions	Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Do not discharge into lakes, streams, ponds or public waters.

7. Handling and storage

Precautions for safe handling

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. All equipment used when handling the product must be grounded. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Purge air from system before introducing gas. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Cold burns may occur during filling operations. Containers and delivery lines may become cold enough to present cold burn hazard. Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture. Avoid contact with eyes, skin and clothing. Avoid prolonged exposure. Do not enter storage areas or confined spaces unless adequately ventilated. Use only outdoors or in a well-ventilated area. Oxygen concentration should not fall below 19.5 % at sea level ($\text{pO}_2 = 135 \text{ mmHg}$). Mechanical ventilation or local exhaust ventilation may be required. Wear appropriate personal protective equipment. Wash thoroughly after handling. Use good industrial hygiene practices in handling this material. When using do not eat or drink.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Stored containers should be periodically checked for general condition and leakage. Store away from incompatible materials (see Section 10 of the SDS). Keep out of reach of children.

8. Exposure controls/Personal protection

Occupational exposure limits

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Material	Type	Value
Isobutane (CAS 75-28-5)	STEL	1000 ppm

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Material	Type	Value
Isobutane (CAS 75-28-5)	STEL	1000 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Material	Type	Value
Isobutane (CAS 75-28-5)	STEL	1000 ppm

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Material	Type	Value
Isobutane (CAS 75-28-5)	15 minute	1250 ppm
	8 hour	1000 ppm

US. ACGIH Threshold Limit Values

Material	Type	Value
Isobutane (CAS 75-28-5)	STEL	1000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
Isobutane (CAS 75-28-5)	TWA	1900 mg/m ³ 800 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Face-shield.

Skin protection

Hand protection Wear cold insulating gloves. Confirm with a reputable supplier first.

Other	As required by employer code. Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Respiratory protection	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. When using do not eat or drink.

9. Physical and chemical properties

Appearance	Pressurized cylinder
Physical state	Gas.
Form	Pressurized cylinder
Color	Not available.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-216.94 °F (-138.3 °C)
Initial boiling point and boiling range	10.94 °F (-11.7 °C)
	10.94 °F (-11.7 °C)
Pour point	Not available.
Specific gravity	0.56 @ 20°C 0.55 0.56
Partition coefficient (n-octanol/water)	2.76
Flash point	-116.9 °F (-82.7 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Flammable gas.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	> 1.8 %
Flammability limit - upper (%)	<= 8.4
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	200 kPa @19
Vapor density	2.06 2.01
Relative density	Not available.
Solubility(ies)	Slight Partial
Auto-ignition temperature	863.6 °F (462 °C) 860 °F (460 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	0.55 g/cm3 at 25 °C 0.56 g/cm3 at 20 °C
Dynamic viscosity	0.24 mPa.s (14 °F (-10 °C))
Explosive properties	Not explosive.
Flash point class	Flammable IA
Heat of combustion (NFPA 30B)	42.8 kJ/g
Kinematic viscosity	0.432 mm ² /s estimated

Molecular formula	C4-H10
Molecular weight	58.12 g/mol
	58.14
Oxidizing properties	Not oxidizing.
Surface tension	14.1 mN/m (14 °F (-10 °C))

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Do not mix with other chemicals.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.

11. Toxicological information

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
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Information on likely routes of exposure

Ingestion	Not a normal route of exposure. The product is a gas at room temperature.
Inhalation	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.
Skin contact	Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Eye contact	Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. Dizziness. Fatigue. Nausea, vomiting. Very high exposure can cause suffocation from lack of oxygen. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
Isobutane (CAS 75-28-5)		
Acute		
Dermal		
LD50	Not available	
Inhalation		
LC50	Rat	> 80000 ppm, 15 min, ECHA 1442738 mg/m ³ , 15 min, ECHA 1443 mg/L, 15 min, ECHA
Oral		
LD50	Not available	
Skin corrosion/irritation		Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Exposure minutes		Not available.
Erythema value		Not available.
Oedema value		Not available.
Serious eye damage/eye irritation		Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Corneal opacity value		Not available.
Iris lesion value		Not available.
Conjunctival reddening value		Not available.
Conjunctival oedema value		Not available.
Recover days		Not available.
Respiratory or skin sensitization		
Respiratory sensitization		Not a respiratory sensitizer.

Skin sensitization	This product is not expected to cause skin sensitization.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	See below.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Teratogenicity	Not available.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	Not available.
Persistence and degradability	No data is available on the degradability of this substance.
Bioaccumulative potential	
Mobility in soil	No data available.
Mobility in general	Not available.
Other adverse effects	Not available.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

Transport of Dangerous Goods (TDG) Proof of Classification	Classification Method: Classified as per Part 2, Sections 2.1 – 2.8 of the Transportation of Dangerous Goods Regulations. If applicable, the technical name and the classification of the product will appear below.
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U.S. Department of Transportation (DOT)

Basic shipping requirements:

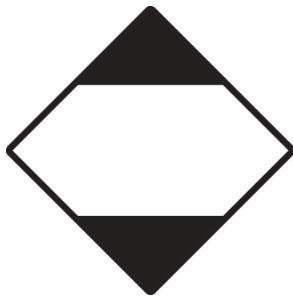
UN number	UN1969
Proper shipping name	Isobutane
Hazard class	Limited Quantity - US
Special provisions	19, T50
Packaging exceptions	306
Packaging non bulk	304

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

UN number	UN1969
Proper shipping name	ISOBUTANE
Hazard class	2.1
Packaging exceptions	<0.125L-Limited Quantity

DOT



TDG



15. Regulatory information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Canada DSL Challenge Substances: Listed substance

Isobutane (CAS 75-28-5) Listed.

Canada NPRI VOCs with Additional Reporting Requirements: Mass reporting threshold/Identification Number

Isobutane (CAS 75-28-5) 1 TONNES

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

WHMIS 2015 Exemptions

Not applicable

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components of this material are on the TSCA Inventory.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Isobutane (CAS 75-28-5) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Flammable (gases, aerosols, liquids, or solids)
Gas under pressure
Simple asphyxiant

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Isobutane (CAS 75-28-5)

US state regulations

See below

US - Illinois Chemical Safety Act: Listed substance

Isobutane (CAS 75-28-5)

US - Louisiana Spill Reporting: Listed substance

Isobutane (CAS 75-28-5)

Listed.

US - Minnesota Haz Subs: Listed substance

Isobutane (CAS 75-28-5)

Listed.

US - Texas Effects Screening Levels: Listed substance

Isobutane (CAS 75-28-5)

Listed.

US. Massachusetts RTK - Substance List

Isobutane (CAS 75-28-5)

US. New Jersey Worker and Community Right-to-Know Act

Isobutane (CAS 75-28-5)

US. Pennsylvania Worker and Community Right-to-Know Law

Isobutane (CAS 75-28-5)

US. California Proposition 65

Not Listed.

Inventory status

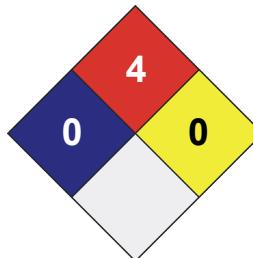
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

HEALTH	*	1
FLAMMABILITY		4
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available. Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

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02

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Prepared by

Nu-Calgon Technical Service Phone: (314) 469-7000

Further information

Not available.

Other information

For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.