

1. Identification

Product identifier	Butane
Other means of identification	
SDS number	0106
Synonyms	Liquefied Petroleum Gases (LPG)
Recommended use	This product is intended for use as a fuel in devices designed for combustion of butane, or for use in industrial processes. Use in other applications may result in a higher exposure and require additional controls, such as local exhaust ventilation and personal protective equipment.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Énergie Valero Inc. 1801 McGill College, 13e étage Montreal, Quebec H3A 2N4
General Information	1-800-295-0391
24-Hour Emergency	Canutec (613) 996-6666 (506) 857-5555
New Brunswick Poison Information Center	(709) 722-1110
Newfoundland Poison Control Center	1-800-565-8161
Nova Scotia / PEI Poison Control Center	1-800-267-1373 (Ottawa) 1-800-268-9017 (Toronto)
Quebec Poison Control Center	1-800-463-5060

2. Hazard(s) identification

Physical hazards	Flammable gases	Category 1
	Gases under pressure	Liquefied gas
Health hazards	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1A
Environmental hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Extremely flammable gas. Contains gas under pressure; may explode if heated. May cause genetic defects. May cause cancer. Presents a health hazard which is not otherwise classified.
Precautionary statements	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF exposed or concerned: Get medical advice/attention. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.
Storage	Store locked up. Protect from sunlight. Store in a well-ventilated place.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling. May displace oxygen and cause rapid suffocation.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
n-Butane	106-97-8	0 - 95
Isobutane	75-28-5	0 - 95
1,3-Butadiene	106-99-0	0 - 0.1

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

4. First-aid measures

Inhalation Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or poison control centre immediately.

Skin contact Wash frost-bitten areas with plenty of water. Do not remove clothing. Get medical attention immediately. When high-pressure isobutane/butane liquid is placed under reduced lower pressure, isobutane/butane vaporizes to be cooled. Thus, skin contact with isobutane/butane may cause frostbite.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion Not likely, due to the form of the product. Ingestion is not a typical route of exposure for gases or liquefied gases.

Most important symptoms/effects, acute and delayed Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Dry chemical, CO2, water spray, fog, or foam.

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical Vapours may form explosive mixtures with air. Vapours 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. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. 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. Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Move container from fire area if it can be done without risk.

Do not extinguish fires unless gas flow can be stopped safely; explosive re-ignition may occur. Promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Stop flow of material. Use water to keep fire exposed containers cool and to protect personnel effecting shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

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. Pressurised container may explode when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate the area promptly. 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 according to applicable regulatory requirements. For personal protection, see section 8 of the SDS. No action shall be taken involving any personal risk or without suitable training. In case of inadequate ventilation, use respiratory protection. Wear appropriate personal protective equipment (See Section 8).

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 vapours or divert vapour 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. Prevent product from entering drains. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS. Ventilate well, stop flow of gas or liquid if possible. Immediately contact emergency personnel.

Environmental precautions

Avoid release to the environment. Should not be released into the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Prevent from entering into soil, ditches, sanitary sewers, waterways and/or groundwater.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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. Use only with adequate ventilation. 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. Do not breathe gas. Do not get in eyes, on skin, on clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear appropriate personal protective equipment (See Section 8). Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Oxygen concentration should not fall below 19.5% at sea level (pO₂ = 135mmHg).

Conditions for safe storage, including any incompatibilities

Store locked up. 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. Secure cylinders in an upright position at all times, close all valves when not in use. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. 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). Store in accordance with local, regional, national, and international regulations. Store in a cool, dry, well-ventilated place. Keep container tightly closed and sealed until ready for use. Protect cylinders from damage.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value
Butane	STEL	1000 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	2 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Material	Type	Value
Butane	TWA	1000 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	4.4 mg/m ³
		2 ppm

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

Material	Type	Value
Butane	STEL	750 ppm
	TWA	600 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	2 ppm

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

Material	Type	Value
Butane	STEL	1000 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	2 ppm

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

Material	Type	Value
Butane	TWA	800 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	2 ppm

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Material	Type	Value
Butane	TWA	1900 mg/m ³ 800 ppm
Components	Type	Value
1,3-Butadiene (CAS 106-99-0)	TWA	4.4 mg/m ³ 2 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
1,3-Butadiene (CAS 106-99-0)	2.5 mg/l	1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane	Urine	*
	2.5 pmol/g	Mixture of N-1- and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts	Hemoglobin in blood	*

* - For sampling details, please see the source document.

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. The engineering controls also need to keep gas, vapor, or dust concentrations below any lower explosive limits. Oxygen concentration should not fall below 19.5% at sea level (pO₂ = 135mmHg).

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear suitable protective clothing. Use of an impervious apron is recommended. Wear protective clothing appropriate for the risk of exposure.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. 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. Wash thoroughly after handling. Do not eat, drink or smoke when using the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practices.

9. Physical and chemical properties**Appearance**

Physical state	Gas.
Form	Liquefied gas.
Colour	Colourless.
Odour	Odourless. May have gas odorant added (ethyl-mercaptan).
Odour threshold	Not available.

pH	Not available.
Melting point/freezing point	-138 °C (-216.4 °F) / -190 °C (-310 °F)
Initial boiling point and boiling range	285.8 - 380 °C (546.44 - 716 °F)
Flash point	< -18.0 °C (< -0.4 °F) Closed cup
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 %
Vapour pressure	<= 483 kPa (37.8 °C (100.04 °F))
Vapour density	2.07
Relative density	0.6
Solubility(ies)	
Solubility (water)	Trace
Partition coefficient (n-octanol/water)	2.89
Auto-ignition temperature	360 °C (680 °F)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Dynamic viscosity	0.01 mPa.s (20 °C (68 °F))
Explosive properties	Not explosive.
Heat of combustion (NFPA 30B)	43.3 kJ/g
Molecular formula	C4H10
Molecular weight	58.12 g/mol
Oxidising properties	Not oxidising.
VOC	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Hazardous polymerisation does not occur. Polymerization will not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
Incompatible materials	Acids. Strong oxidising agents. Oxidizing agents. Reducing Agents. Nitrates. Fluorine. Chlorine. Alkalis.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.
Skin contact	Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").
Eye contact	Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite ("cold burn").
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.
Information on toxicological effects	
Acute toxicity	Rapid evaporation of the liquid may cause frostbite.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitisation	
Respiratory sensitisation	Not a respiratory sensitizer.
Skin sensitisation	This product is not expected to cause skin sensitisation.
Germ cell mutagenicity	May cause genetic defects.
Carcinogenicity	May cause cancer.
ACGIH Carcinogens	
1,3-Butadiene (CAS 106-99-0)	A2 Suspected human carcinogen.
Canada - Alberta OELs: Carcinogen category	
1,3-Butadiene (CAS 106-99-0)	Suspected human carcinogen.
Canada - Manitoba OELs: carcinogenicity	
1,3-Butadiene (CAS 106-99-0)	Suspected human carcinogen.
Canada - Quebec OELs: Carcinogen category	
1,3-Butadiene (CAS 106-99-0)	Suspected carcinogenic effect in humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
1,3-Butadiene (CAS 106-99-0)	1 Carcinogenic to humans.
US. National Toxicology Program (NTP) Report on Carcinogens	
1,3-Butadiene (CAS 106-99-0)	Known To Be Human Carcinogen.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
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. May cause central nervous system effects.
Further information	BUTANES: Studies in laboratory animals indicate exposure to extremely high levels of butanes (1-10 or higher vol-% in air) may cause cardiac arrhythmias (irregular heartbeats), which can be serious or fatal.

12. Ecological information

Ecotoxicity	Harmful to aquatic life with long lasting effects.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	
Partition coefficient n-octanol / water (log Kow)	
Butane	2.89
1,3-Butadiene (CAS 106-99-0)	1.99
Mobility in soil	No data available.
Other adverse effects	The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. Empty containers may contain product residues. Do not puncture or incinerate even when empty. This material and/or its container must be disposed of as hazardous waste. Return the empty cylinder to the supplier.
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

TDG

UN number	UN1075
UN proper shipping name	LIQUEFIED PETROLEUM GASES
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not available.
Environmental hazards	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN1075
UN proper shipping name	Petroleum gases, liquefied
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not available.
Environmental hazards	No.
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1075
UN proper shipping name	PETROLEUM GASES, LIQUEFIED
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not available.
Environmental hazards	
Marine pollutant	No.
EmS	E-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

General information Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: Ensure that containers are firmly secured. Ensure cylinder valve is closed and not leaking. Ensure valve outlet cap nut or plug (where provided) is correctly fitted. Ensure valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

15. Regulatory information

Canadian 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.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

1,3-Butadiene (CAS 106-99-0)

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date 18-August-2016

Revision date 02-March-2018

Version No. 03

Disclaimer The information given is based on data available for the material, the components of the material, and similar materials. Énergie Valero Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.