SAFETY DATA SHEET



1. Identification

Product identifier Butane

Other means of identification

SDS number 303-GHS

Butane * Normal Butane * n-Butane * Commercial Butane * Mixed Butane * Natural Butane **Synonyms**

Recommended use Use as a fuel or feedstock into an engineered process.

Recommended restrictions No other uses are advised. Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Valero Marketing & Supply Company and Affiliates

One Valero Way

San Antonio, TX 78269-6000

General Assistance 210-345-4593

E-Mail CorpHSE@valero.com **Contact Person** Industrial Hygienist

Emergency Telephone 24 Hour Emergency 866-565-5220

1-800-424-9300 (CHEMTREC USA)

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

OSHA defined hazards Simple asphyxiant

Label elements



Signal word Danger

Extremely flammable gas. Contains gas under pressure; may explode if heated. May displace **Hazard statement**

oxygen and cause rapid suffocation. May cause genetic defects. May cause cancer.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read

and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only with adequate ventilation. Do not enter storage areas or confined spaces unless adequately

ventilated. Wear protective gloves/protective clothing/eye protection/face protection.

If exposed or concerned: Get medical advice/attention. Leaking gas fire: Do not extinguish, unless Response

leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Keep container tightly closed. Store locked up. Protect from sunlight. Store in a well-ventilated Storage

place.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

classified (HNOC)

Hazard(s) not otherwise Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). Static

> accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Butane

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Chemical name	CAS number	% 94 - 100	
Butane	106-97-8		
Hazardous Components			
Chemical name	CAS number	%	
Isobutane	75-28-5	0 - 6	
1-Butene	25167-67-3 C		
1,3-butadiene	106-99-0	0 - 0.1	

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. Move to fresh air. Get medical attention immediately.

Skin contact

If frostbite occurs, immerse affected area in warm water (not exceeding 105°F/41°C). Keep immersed for 20 to 40 minutes. Get medical attention immediately.

Eye contact

If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact lenses.

Ingestion

Not likely, due to the form of the product.

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 themself. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). Prolonged exposure may cause chronic effects.

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. Carbon dioxide (CO2). Use fire-extinguishing media appropriate for surrounding materials.

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. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. 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. 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.

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. The product is immiscible with water and will spread on the water surface. For waste disposal, see section 13 of the SDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

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. 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 (pO2 = 135 mmHg). Mechanical ventilation or local exhaust ventilation may be required. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

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).

8. Exposure controls/personal protection

Occupational exposure limits

Hazardous Components	Type	Value	
1,3-butadiene (CAS 106-99-0)	STEL	5 ppm	
	TWA	1 ppm	
US. ACGIH Threshold Limit Values	i		
Material	Туре	Value	
Butane	STEL	1000 ppm	
Components	Туре	Value	
Butane (CAS 106-97-8)	STEL	1000 ppm	
Hazardous Components	Туре	Value	
1,3-butadiene (CAS 106-99-0)	TWA	2 ppm	
1-Butene (CAS 25167-67-3)	67-67-3) TWA 250 ppm		
Isobutane (CAS 75-28-5)	STEL	1000 ppm	

US, OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

US. NIOSH: Pocket Guide to Chemical Hazards Material Value			
Butane	TWA	1900 mg/m3	
		800 ppm	
Components	Туре	Value	
Butane (CAS 106-97-8)	TWA	1900 mg/m3	
		800 ppm	
Hazardous Components	Туре	Value	
Isobutane (CAS 75-28-5)	TWA	1900 mg/m3	
		800 ppm	

Biological limit values

ACGIH Biological Exposured Hazardous Components	Value	Determinant	Specimen	Sampling Time	
1,3-butadiene (CAS 106-99-0)	2.5 mg/l	1,2-Dihydroxy- 4-(N-acetylcyst einyl)-butane	Urine	*	
	2.5 pmol/g	Mixture of N-1- and N-2-(hydroxybu tenyl)valine hemoglobin (Hb) adducts	Blood	*	

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

Appropriate engineering controls

Good general ventilation 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 Wear approved safety glasses or goggles.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove

supplier.

Skin protection

Other Wear protective clothing appropriate for the risk of exposure.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary. Contact with liquefied gas might

cause frostbites, in some cases with tissue damage.

General hygiene considerations

Observe any medical surveillance requirements. 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.

9. Physical and chemical properties

Appearance

Physical state Gas.

Form Compressed liquefied gas.

Color Colorless.

Odor Faint petroleum odor.

Odor threshold Not available.

PH Not available.

Melting point/freezing point -266.35 °F (-165.75 °C) Weighted average

Initial boiling point and boiling

range

Not available.

Flash point -76.0 °F (-60.0 °C) Closed Cup (Butane)

Butane

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Evaporation rate Not available. **Flammability (solid, gas)** Flammable gas.

Upper/lower flammability or explosive limits

(%)

Flammability limit - upper

Flammability limit - lower

(%)

8.5 % (Butane)

1.9 % (Butane)

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density 2 Air = 1

Relative density 0.57 (water=1) Weighted average

Solubility(ies)

Solubility (water) Insoluble.

Partition coefficient Not available.
(n-octanol/water)

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties Not explosive.

Molecular formula Mixture, not applicable

Oxidizing properties Not oxidizing.

Percent volatile Essentially 100%

VOC 100 %

10. Stability and reactivity

ReactivityThe product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous

reactions

No dangerous reaction known under conditions of normal use.

Conditions to avoid In a fire or if heated, a pressure increase will occur and the container may burst or explode. Avoid

heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash

point. Contact with incompatible materials.

Incompatible materials Strong oxidizing agents. Acids.

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. Prolonged inhalation may be harmful.

Skin contact Contact with compressed gas can cause damage (frostbite) due to rapid evaporative cooling.

Eye contact Contact with compressed gas can cause damage (frostbite) due to rapid evaporative cooling.

Ingestion Not likely, due to the form of the product.

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 themself. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). Prolonged exposure may cause chronic effects.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

Butane

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Components Species Test Results

Butane (CAS 106-97-8)

Acute Inhalation

LC50 Rat 658 mg/l, 4 Hours

Skin corrosion/irritation Serious eve damage/eve

Serious eye damage/eye irritation

Contact with compressed gas can cause damage (frostbite) due to rapid evaporative cooling. Contact with compressed gas can cause damage (frostbite) due to rapid evaporative cooling.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity May cause genetic defects.

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

1,3-butadiene (CAS 106-99-0) 1 Carcinogenic to humans.

NTP Report on Carcinogens

1,3-butadiene (CAS 106-99-0) Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

1,3-butadiene (CAS 106-99-0) Cancer

Reproductive toxicityThis 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.

12. Ecological information

EcotoxicityThe product is not classified as environmentally hazardous. However, this does not exclude the

possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability Expected to be inherently biodegradable.

Bioaccumulative potential The product is not bioaccumulating.

Partition coefficient n-octanol / water (log Kow)

Butane (CAS 106-97-8) 2.89

Mobility in soil Not applicable.

Other adverse effects The product is a volatile organic compound which has a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructionsCollect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the

material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. 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 D001: Waste Flammable material with a flash point <140 °F

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

DOT

UN number UN1075

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UN proper shipping name Petroleum gases, liquefied

Transport hazard class(es)

Class 2.1 Subsidiary risk -Label(s) 2.1

Packing group Not applicable.

Environmental hazards

Marine pollutant Yes

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisionsT50Packaging exceptions306Packaging non bulk304Packaging bulk314, 315

IATA

UN number UN1075

UN proper shipping name Petroleum gases, liquefied

Transport hazard class(es)

Class 2.1 Subsidiary risk -

Packing group Not applicable.

ERG Code No.

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 applicable.

Environmental hazards

Marine pollutant Yes
EmS F-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

General information

Shipping descriptions in this section are offered as examples only. Classification for transport must accurately reflect the material hazards as designated under a variety of regulations and is solely

the responsibility of the person offering the material for transport into commerce.

15. Regulatory information

US federal regulationsThis product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication

Standard, 29 CFR 1910.1200.

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

Not applicable.

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

 1,3-butadiene (CAS 106-99-0)
 Listed.

 Butane (CAS 106-97-8)
 Listed.

 Isobutane (CAS 75-28-5)
 Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

1,3-butadiene (CAS 106-99-0) Cancer

Eye irritation

respiratory tract irritation Central nervous system

Flammability

Butane

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Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous

Yes

chemical

Classified hazard

Flammable (gases, aerosols, liquids, or solids)

categories

Germ cell mutagenicity Carcinogenicity Simple asphyxiant

Gas under pressure

Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

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

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

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

1,3-butadiene (CAS 106-99-0) 1-Butene (CAS 25167-67-3) Butane (CAS 106-97-8) Isobutane (CAS 75-28-5)

Safe Drinking Water Act

Not regulated.

(SDWA)

Food and Drug

Administration (FDA)

Total food additive
Direct food additive
GRAS food additive

US state regulations

US. Massachusetts RTK - Substance List

1,3-butadiene (CAS 106-99-0) Butane (CAS 106-97-8) Isobutane (CAS 75-28-5)

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

1,3-butadiene (CAS 106-99-0) 1-Butene (CAS 25167-67-3) Butane (CAS 106-97-8) Isobutane (CAS 75-28-5)

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

1,3-butadiene (CAS 106-99-0) Butane (CAS 106-97-8) Isobutane (CAS 75-28-5)

US. Rhode Island RTK

1,3-butadiene (CAS 106-99-0) 1-Butene (CAS 25167-67-3) Butane (CAS 106-97-8)

California Proposition 65



WARNING: This product can expose you to 1,3-butadiene, which is known to the State of California to cause

cancer and birth defects or other reproductive harm. For more information go

to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

1,3-butadiene (CAS 106-99-0) Listed: April 1, 1988

California Proposition 65 - CRT: Listed date/Developmental toxin

1,3-butadiene (CAS 106-99-0) Listed: April 16, 2004

California Proposition 65 - CRT: Listed date/Female reproductive toxin

1,3-butadiene (CAS 106-99-0) Listed: April 16, 2004

California Proposition 65 - CRT: Listed date/Male reproductive toxin

1,3-butadiene (CAS 106-99-0) Listed: April 16, 2004

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US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

1,3-butadiene (CAS 106-99-0) Butane (CAS 106-97-8) Isobutane (CAS 75-28-5)

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

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

Toxic Substances Control Act (TSCA) Inventory

16. Other information, including date of preparation or last revision

Issue date13-August-2013Revision date27-August-2020

Version # 03

United States & Puerto Rico

NFPA ratings



Disclaimer

The information in this Safety Data Sheet (SDS) was obtained from sources believed to be reliable and accurate, and is not represented as being absolutely complete. The end user of this product has the responsibility for evaluating the adequacy of the data for the intended application and conditions of use; for determining the safety, toxicity, regulatory requirements, and suitability of the product under these conditions; and for obtaining additional or clarifying data where uncertainty exists. The data serves as general guidance only, and is to be used in combination with professional judgement of persons experienced in a specific application, use or process; and additional data may be required. Valero Marketing & Supply Co., (Valero) provides this data without any warranty, expressed or implied regarding its correctness or accuracy; and does not assume any liability arising out of product handling, storage, use or disposal by others.

Yes

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).