SAFETY DATA SHEET

Revision: 16th February 2023 Version: 5.1

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

BUTANE V8000a

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name	BUTANE
Product description	V8000a-BUTANE-BUTANE
Trade Name	BUTANE
Product code	BUT
CAS No.	106-97-8
EC No.	203-448-7
REACH Registration No.	Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)	Fuel for engines. Blend component.
Uses advised against	Anything other than the above.

1.3 Details of the supplier of the safety data sheet

Company Identification	Vitol SA Place des Bergues 3 1201 Geneva Switzerland
Telephone	+31 10 498 7200
Fax	+31 10 452 9545
E-mail (competent person)	xreach@vitol.com

1.4 Emergency Telephone Number

Emergency Phone No.	+44 (0) 1235 239 670, 24/7
Language(s) spoken:	All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Flam. Gas 1; H220
Gases under pressure; H280

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product description: V8000a-BUTANE-BUTANE

Hazard Pictogram(s)

Signal Word(s): DANGER

Hazard Statement(s):
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

Precautionary Statement(s):
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. 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

The vapour is heavier than air; beware of pits and confined spaces. Vapour may create explosive atmosphere. The vapour may have narcotic effect. Frostbite (cold burn).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

SUBSTANCE	CAS No.	EC No.	REACH Registration No.	%W/W
Butane (<0.1% butadiene)	106-97-8	203-448-7	Not yet assigned in the supply chain	100

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider: Eliminate sources of ignition. Use personal protective equipment as required. The vapour is heavier than air; beware of pits and confined spaces. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. If it is suspected that fumes are still present, the responder should wear an appropriate mask or self-contained breathing apparatus. Avoid all contact.

Inhalation: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell.

Skin contact: IF ON SKIN: Remove clothing and wash thoroughly before use. Wash affected skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention. Frostbite (cold burn): Do not attempt to remove clothing that adheres to the skin due to freezing. Thaw frosted parts with lukewarm water. Do no rub affected area. Seek medical advice.

Eye contact: IF IN EYES: Flush eyes with water for at least 15 minutes while holding eyelids open. Get medical attention if eye irritation develops or persists. Frostbite (cold burn): Obtain immediate medical attention. Treatment by an ophthalmologist due to possible caustic burn of the eyes may be required.

Ingestion: IF SWALLOWED: Rinse mouth. Give 200-300mls (half pint) water to drink. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

The vapour may have narcotic effect.
Skin contact: Frostbite (cold burn)

4.3 Indication of any immediate medical attention and special treatment needed

Unlikely to be required but if necessary treat symptomatically.

Notes to a physician: IF INHALED: Administer oxygen if available and artificial respiration if necessary.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or CO2
Unsuitable extinguishing media: Do not use water jet. Direct water jet may spread the fire.

5.2 Special hazards arising from the substance or mixture

Extremely flammable gas. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Vapour may create explosive atmosphere. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. The vapour is heavier than air; beware of pits and confined spaces. Combustion or thermal decomposition will evolve very toxic, irritant and flammable vapours. Hazardous decomposition products: Carbon monoxide, Carbon dioxide, Aldehydes, Ketones, Hydrogen, Alkene, Methane, A mixture of

		solid and liquid particulates and gases including unidentified organic and inorganic compounds.
	Compressed gas	Contains gas under pressure; may explode if heated. Sealed containers may rupture explosively if hot. Do not pierce or burn, even after use.
5.3	**Advice for firefighters**	Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to environment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Avoid all contact. Do not breathe vapour. Shut off source of leak if safe to do so. Eliminate all ignition sources if safe to do so. Ensure adequate ventilation. Stay upwind/keep distance from source. In case of inadequate ventilation wear respiratory protection. Wear suitable protective clothing. The vapour is heavier than air; beware of pits and confined spaces. Danger of flashback. Take precautionary measures against static discharge. Do not use sparking tools. Spillage can create tripping or slipping hazards for personnel, or skidding hazards for vehicles. Only trained and properly protected personnel must be involved in clean-up operations. Contaminated clothing should be thoroughly cleaned.
6.2	**Environmental precautions**	Avoid release to the environment. Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.
6.3	**Methods and material for containment and cleaning up**	Only trained and properly protected personnel must be involved in clean-up operations. Ensure adequate ventilation. Isolate the area and allow vapours to disperse.
	Small scale:	Contain spillages with sand, earth or any suitable adsorbent material. Allow small spillages to evaporate provided there is adequate ventilation. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete.
	Large scale:	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. Notify police and fire brigade as soon as possible.
6.4	**Reference to other sections**	See sections 8 and 13

SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Avoid all contact. Do not breathe vapour. Eliminate sources of ignition. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. The vapour is heavier than air; beware of pits and confined spaces. Danger of flashback. Take precautionary measures against static discharge. Do not use sparking tools. Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. In case of inadequate ventilation wear respiratory protection. Wear suitable protective clothing. Wash hands and exposed skin thoroughly after handling. Do not eat, drink or smoke at the work place. Wash contaminated clothing before reuse.
7.2	**Conditions for safe storage, including any incompatibilities**	Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Ensure adequate earthing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	Storage temperature	Keep cool.
	Incompatible materials	Chlorine, Oxygen, Strong oxidising agents. Keep away from heat and sources of ignition.
7.3	**Specific end use(s)**	See Section: 1.2

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Butane	106-97-8	600	1450	750	1810	WEL

Source: WEL: Workplace Exposure Limit (UK HSE EH40)

8.1.2 Biological limit value Not established.

8.1.3 PNECs and DNELs Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are closely located to the working place.

8.2.2 Individual protection measures, such as personal protective equipment Fuels are typically used, transferred and transported in closed systems. Keep good industrial hygiene. Do not eat, drink or smoke at the work place.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection

Wear eye protection with side protection (EN166). Eyewash bottles should be available.

Skin protection

Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Protective index 4, corresponding > 120 minutes of permeation time according to EN 374
Suitable material: Nitrile rubber

Body protection: Apron or other light protective clothing, boots and plastic or rubber gloves.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.
Recommended: BS EN 14387:2004+A1

Thermal hazards Skin contact: Frostbite (cold burn).

8.2.3 Environmental exposure controls Avoid release to environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquefied gas
Colour	Colourless
Odour	Odourless
Melting point/freezing point	- 159 °C
Boiling point or initial boiling point and boiling range	- 2 °C
Flammability	Extremely flammable gas.
Lower and upper explosion limit	Flammable Limits (Lower) (%v/v): 1.9 Flammable Limits (Upper) (%v/v): 15
Flash point	< - 20 °C

Auto-ignition temperature	410 - 550 °C
Decomposition temperature	Not established
pH	Not applicable
Kinematic viscosity	Not established
Solubility	Water: 0.054 g/l @ 20°C
Partition coefficient: n-octanol/water (log value)	Log Pow: 2.36-2.9
Vapour pressure	>210,000 pascal @ 20°C
Density and/or relative density	Not established
Relative vapour density	2.007
Particle characteristics	Not established

9.2 Other information No information available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity Not determined. Stable under normal conditions.

10.2 Chemical stability Stable under normal conditions.

10.3 Possibility of hazardous reactions Not determined. No information available. Vapour is explosive in air at temperatures higher than the flash point.

10.4 Conditions to avoid Keep away from heat and sources of ignition.

10.5 Incompatible materials Keep away from: Chlorine, Oxygen, Strong oxidising agents.

10.6 Hazardous decomposition products Combustion products: Carbon monoxide, Carbon dioxide, Aldehydes, Ketones, Hydrogen, Alkene, Methane, A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) LD50: > 2,000 mg/kg
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. LC50 Inhalation (rat): 570,000 ppm/ 15 minutes
Acute toxicity - Skin contact	Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) LD50: > 2,000 mg/kg
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met.
Respiratory or skin sensitisation	Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met. There is no evidence of mutagenic potential. Contains: < 0.1% butadiene
Carcinogenicity	Based upon the available data, the classification criteria are not met. No evidence of carcinogenicity. Contains: < 0.1% butadiene
Reproductive toxicity	Based upon the available data, the classification criteria are not met. No evidence of reproductive effects.
STOT - Single Exposure	Based upon the available data, the classification criteria are not met.
STOT - Repeated Exposure	Based upon the available data, the classification criteria are not met.
Aspiration hazard	Based upon the available data, the classification criteria are not met.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties This substance does not have endocrine disrupting properties with respect to humans.

11.2.2 Other information None.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity Based upon the available data, the classification criteria are not met. LC50 (Fish): > 1000 mg/l/96h

12.2 Persistence and degradability Bioconcentration factor (BCF): 1.57-1.97

12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation.
12.4	**Mobility in soil**	Not relevant, due to the form of the product. The product is a volatile substance, which may spread in the atmosphere
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Endocrine disrupting properties**	This substance does not have endocrine disrupting properties with respect to non-target organisms.
12.7	**Other adverse effects**	None Known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Disposal should be in accordance with local, state or national legislation. Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.
	Waste classification according to Directive 2008/98/EC (Waste Framework Directive)	EU Waste Codes: HP3
13.2	**Additional information**	Containers of this material may be hazardous when empty since they retain product residue. Do not pierce or burn, even after use.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	IMDG	IATA/ICAO
14.1	**UN number or ID number**	1011	1011	1011
14.2	**UN proper shipping name**	BUTANE	BUTANE	BUTANE
14.3	**Transport hazard class(es)**	2	2	2
14.4	**Packing group**	None assigned.	None assigned.	None assigned.
14.5	**Environmental hazards**	Not classified.	Not classified.	Not classified.
14.6	**Special precautions for user**	See Section: 2		
14.7	**Maritime transport in bulk according to IMO instruments**	Not applicable	Not applicable	Not applicable
14.8	**Additional information**			
	Special Provisions	392, 652, 657, 662, 674		

SECTION 15: REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	
15.1.1	**EU regulations**	
	Authorisations and/or restrictions on use	None - Contains: <0.1% Butadiene
15.1.2	**National regulations**	
	Germany	Water hazard class: Not hazardous
15.2	**Chemical Safety Assessment**	None.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation 2020/878 format, all sections have been updated to include new information. Please review SDS with care.

References:
Existing Safety Data Sheet (SDS)
EU Harmonised Classification and Existing ECHA registration for BUTANE (CAS No. 106-97-8).

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

Legend

ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor

CAS	Chemical Abstracts Service
DNEL	Derived no effect level
EC	European Community
EN	European Standard
EU	European Union
IATA	International Air Transport Association
ICAO/IATA	ICAO: International Civil Aviation Organization / IATA: International Air Transport Association
IMDG	International Maritime Dangerous Goods
Kd	Partition Coefficient
LC50	Lethal concentration 50
LD50	Lethal dose 50
LOAEL	Lowest Observed Adverse Effect Level
LTEL	Long term exposure limit
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Cooperation and Development
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short term exposure limit
TWA	Time Weighted Average
UN	United Nations
vPvB	very Persistent and very Bioaccumulative

Hazard classification / Classification code:
Flam. Gas 1, Flammable gas, Category 1
Gases under pressure

Hazard Statement(s)
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vitol SA gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vitol SA accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.