

n-BUTANE FRACTION

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Revision date: 21 Dec 2020 Version: 4.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Trade name	: n-BUTANE FRACTION
Chemical name	: butane
EC Index-No.	: 601-004-00-0
EC-No.	: 203-448-7
CAS-No.	: 106-97-8
REACH registration No	: 01-2119474691-32
Formula	: C ₄ H ₁₀
Synonyms	: bottled gas (=butane) / bottogas / butagas / butane / butane, pure / butyl hydride / calor gas / diethyl / glogas / kosangas / liquefied petroleum gas (=normal-butane) / LPG (=liquefied petroleum gas (=butane) / methylethylmethane / n-methylethylmethane / normal-butane / normal-methylethylmethane / R600 / rural gas

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

1.2.1. Relevant identified uses

Main use category	: Industrial use, Professional use, Consumer use
Use of the substance/mixture	: Coolant Solvent
Function or use category	: Fuels, Intermediates

Title	Use descriptors
Distribution of substance	SU8, SU9, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Use as a fuel	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16, ERC7
Blowing agents	SU0, PROC1, PROC2, PROC3, PROC8b, PROC9, PROC12, ERC4
Formulation and (re)packaging of substances and mixtures	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, ERC2
Polymer production	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16, ERC4, ERC6c
Polymer processing	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8b, PROC9, PROC13, PROC14, ERC4
Functional fluids	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, ERC7
Use as a fuel	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16, ERC9a, ERC9b
Propellants	SU0, PROC11, ERC8a, ERC8d
Polymer processing	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC21, ERC8a
Functional fluids	SU0, PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20, ERC9a, ERC9b
Use as a fuel	PC13, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC16, ERC9a, ERC9b

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

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1.3. Details of the supplier of the safety data sheet

Manufacturer

ZapSibNeftekhim LLC
Promzona
626150 Tobolsk, Tyumen region - Russian Federation
T +7 (3456) 398-000 - F +7 (3456) 266-449
ZapSib@sibur.ru

Only Representative

Gazprom Marketing and Trading France
avenue des Champs-Élysées 68
75008 Paris - France
T +33 1 42 99 73 50 - F +33 1 42 99 73 99
didier.lebout@gazprom-mt.com

1.4. Emergency telephone number

Emergency number : +7 (3456) 398-755; +7 (3456) 398-000, ext. 8899 (office hours only, GMT+5)

Country	Official advisory body	Address	Emergency number	Comment
Belgium	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+32 70 245 245	Please dial: 070 245 245 for any urgent questions about intoxication (free of charge 24/7), if not accessible, dial: 02 264 96 30 (standard fee)
Croatia	Centar za kontrolu otrovanja Institut za medicinska istraživanja i medicinu rada	Ksaverska Cesta 2 p.p. 291 10000 Zagreb	+385 1 234 8342	
Denmark	Giftlinjen Bispebjerg Hospital	Bispebjerg Bakke 23 2400 København NV	+45 82 12 12 12	
Estonia	Mürgistusteabekeskus	Gonsiori 29 15027 Tallinn	16662 +372 626 93 90	
Finland	Myrkytystietokeskus	Stenbäckinkatu 9 PO BOX 100 29 Helsinki	+358 9 471 977 +358 800 147 111	
Greece	Poisons Information Centre Children's Hospital P&A Kyriakou	11762 Athens	+30 2 10 779 3777	
Greece	Department of Forensic Medicine & Toxicology Aristotle University of Thessaloniki, Medical Faculty	54006 Thessaloniki		
Latvia	Valsts Toksikoloģijas centrs, Saindēšanās un zāļu informācijas centrs	Hipokrāta 2 1038 Rīga	+371 67 04 24 73	
Lithuania	Apsinuodijimų informacijos biuras	Birutės g. 56 8110 Vilnius	+370 5 236 20 52 +370 687 53378	
Luxembourg	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+352 8002 5500	
Malta	Medicines & Poisons Info Office	Mater Dei Hospital MSD Msida	+356 2545 6504	
Norway	Giftinformasjonen Helsedirektoratet	P.O. Box 7000 St. Olavs Plass 130 Oslo	+47 22 591300	
Slovakia	Národné toxikologické informačné centrum Univerzitná nemocnica Bratislava, pracovisko Kramáre, Klinika pracovného lekárstva a toxikológie	Limbová 5 833 05 Bratislava	+421 2 54 77 41 66	

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Slovenia	Center za klinično toksikologijo in farmakologijo Interna klinika, UKCL	Zaloška cesta 7 1525 Ljubljana	+386 41 650 500	
Sweden	Giftinformationscentralen	Box 60 500 171 76 Stockholm	112 – begär Giftinformation +46 10 456 6700 (Från utlandet)	
Switzerland	Tox Info Suisse	Freiestrasse 16 8032 Zürich	145	(from abroad: +41 44 251 51 51) non urgent inquiry: +41 44 251 66 66
Turkey	Ulusal Zehir Merkezi (UZEM) Refik Saydam Hıfzıssıhha Merkezi Başkanlığı	Cemal Gürsel Cd. No: 18 Sıhhiye Çankaya 06590 Ankara	114	Information is provided to public and medical personnel on poisoning incidents via 114.
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA Belfast	0344 892 0111	
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	
United Kingdom	National Poisons Information Service (Cardiff Centre) Gwenwyn Ward, Llandough Hospital	Penarth CF64 2XX Cardiff	0344 892 0111	
United Kingdom	National Poisons Information Service Edinburgh Royal Infirmary of Edinburgh	Little France Crescent EH16 4SA Edinburgh	0344 892 0111	
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	+44 20 7188 7188	
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0344 892 0111	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable gases, Category 1 H220
Gases under pressure : Liquefied gas H280
Full text of H statements : see section 16

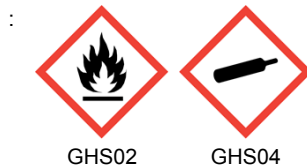
Adverse physicochemical, human health and environmental effects

Extremely flammable gas. Contains gas under pressure; may explode if heated.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

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Hazard statements (CLP)	: H220 - Extremely flammable gas. H280 - Contains gas under pressure; may explode if heated.
Precautionary statements (CLP)	: P102 - Keep out of reach of children. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P381 - In case of leakage, eliminate all ignition sources. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type	: Mono-constituent
Name	: n-BUTANE FRACTION
CAS-No.	: 106-97-8
EC-No.	: 203-448-7
EC Index-No.	: 601-004-00-0

Name	Product identifier	%
Butane (Note C)(Note U)	(CAS-No.) 106-97-8 (EC-No.) 203-448-7 (EC Index-No.) 601-004-00-0 (REACH-no) 01-2119474691-32	98.6 – 99.5
1,3-butadiene (Note D)(Note U)	(CAS-No.) 106-99-0 (EC-No.) 203-450-8 (EC Index-No.) 601-013-00-X	< 0.1

Note C : Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

Note D : Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed in Part 3. However, such substances are sometimes placed on the market in a non-stabilised form. In this case, the supplier must state on the label the name of the substance followed by the words 'non-stabilised'.

Note U (Table 3): When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.
First-aid measures after inhalation	: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

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First-aid measures after skin contact	: In case of frostbites: Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.
First-aid measures after eye contact	: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist.
First-aid measures after ingestion	: Ingestion unlikely.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	: EXPOSURE TO HIGH CONCENTRATIONS: Headache. Vomiting. Nausea. Feeling of weakness. Rapid respiration. Accelerated heart action. Central nervous system depression. Coordination disorders. Emotional instability. Respiratory difficulties. Disturbances of consciousness. Cramps/uncontrolled muscular contractions.
Symptoms/effects after skin contact	: Frostbites.
Symptoms/effects after eye contact	: Frostbites.
Chronic symptoms	: No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher.
Unsuitable extinguishing media	: Quick-acting CO2 extinguisher. Water (water can be used to control jet flame). Foam. Water (water can be used to control jet flame). Foam.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: DIRECT FIRE HAZARD: Extremely flammable gas. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD: May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	: DIRECT EXPLOSION HAZARD: Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD: Contains gas under pressure; may explode if heated. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".
Hazardous decomposition products in case of fire	: Upon combustion: CO and CO2 are formed.

5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire may cause containers to rupture/explode.
Firefighting instructions	: If no hazard for/from the surroundings: controlled burning. If hazardous substances are nearby: consider extinguishment. Extinguish only if gas supply/leak can be shut afterwards. Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: extinguish/cool from behind cover. Do not move the load if exposed to heat. After cooling: persistent risk of physical explosion.
Protection during firefighting	: Heat/fire exposure: compressed air apparatus (EN 136 + EN 137).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	: Cold insulating gloves (EN 511). Protective clothing (EN 14605 or EN 13034). Large spills/in enclosed spaces: compressed air apparatus (EN 136 + EN 137).
Emergency procedures	: Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Avoid ingress of water in the containers. Wash contaminated clothes.

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6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment : Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Tip the container on one side to stop the leakage. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not spray water on unheated tank walls. Do not use compressed air for pumping over spills.

Methods for cleaning up : Liquid spill: cover with foam or sand/earth. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

Other information : Dispose of waste in accordance with environmental legislation.

6.4. Reference to other sections

For further information refer to section 13. See Heading 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Extremely flammable liquefied gas.

Precautions for safe handling : Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Measure the concentration in the air regularly. Work under local exhaust/ventilation. Comply with the legal requirements. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not use compressed air for pumping over.

Hygiene measures : Observe normal hygiene standards.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Protect from sunlight. Store in a well-ventilated place. Keep cool. Store in tightly closed container. Containers which are opened should be properly resealed and kept upright to prevent leakage.

Incompatible products : Oxidizing materials. Peroxides. oxygen. halogens (F, Cl, Br, I). Hydrogen halogenides. Combustible materials.

Storage temperature : < 50 °C

Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Information on mixed storage : KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids. highly flammable materials. halogens. gases.

Storage area : Keep out of direct sunlight. Store in a cool area. Ventilation at floor level. Fireproof storeroom. Provide for an automatic sprinkler system. Provide for a tub to collect spills. Provide the tank with earthing. Under a shelter/in the open. Aboveground. Meet the legal requirements.

Special rules on packaging : SPECIAL REQUIREMENTS: with pressure relief valve. clean. correctly labelled. meet the legal requirements.

Packaging materials : SUITABLE MATERIAL: steel. stainless steel. monel steel. carbon steel. aluminium. iron. copper. polyethylene.

7.3. Specific end use(s)

No additional information available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

n-BUTANE FRACTION (106-97-8)	
Belgium - Occupational Exposure Limits	
Local name	Butane, tous isomères: n-butane # Butaan, alle isomeren: n-butaan
Short time value (mg/m ³)	2370 mg/m ³
Short time value (ppm)	980 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 21/01/2020
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	Butan
Occupational exposure limit value (mg/m ³)	2400 mg/m ³
Occupational exposure limit value (ppm)	1000 ppm
Limitation of exposure peaks	4(II)
TRGS 900 Remark	DFG
TRGS 900 Regulatory reference	TRGS900
Hungary - Occupational Exposure Limits	
Local name	n-BUTÁN
AK-érték	2350 mg/m ³
CK-érték	9400 mg/m ³
Megjegyzések (HU)	N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Poland - Occupational Exposure Limits	
Local name	Butan (n-butan)
NDS (mg/m ³)	1900 mg/m ³
NDSCh (mg/m ³)	3000 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Spain - Occupational Exposure Limits	
Local name	Butano
VLA-ED (ppm)	1000 ppm Hidrocarburos alifáticos alcanos (C1 – C4) y sus mezclas, gases (Butano; Etano; Metano; Propano)
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2019. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	Butane
WEL TWA (mg/m ³)	1450 mg/m ³
WEL TWA (ppm)	600 ppm
WEL STEL (mg/m ³)	1810 mg/m ³
WEL STEL (ppm)	750 ppm
Remark (WEL)	Carc (Capable of causing cancer and/or heritable genetic damage, only applies if Butane contains more than 0.1% of buta-1,3-diene)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

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

EU - Occupational Exposure Limits

Local name	1,3-Butadiene
IOELV TWA (mg/m ³)	2.2 mg/m ³ (BOEL)
IOELV TWA (ppm)	1 ppm (BOEL)
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)

Belgium - Occupational Exposure Limits

Local name	1,3-Butadiène # 1,3-Butadien
Limit value (mg/m ³)	2.2 mg/m ³
Limit value (ppm)	1 ppm
Remark (BE)	C: la mention "C" signifie que l'agent en question relève du champ d'application du titre 2 relatif aux agents cancérigènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk.
Regulatory reference	Koninklijk besluit/Arrêté royal 21/01/2020

Germany - Occupational Exposure Limits (TRGS 910)

TRGS 910 Local name	1,3-Butadien
TRGS 910 Acceptable concentration (Volume conc.)	0.2 ppm
TRGS 910 Acceptable concentration (Weight conc.)	0.5 mg/m ³
TRGS 910 Acceptable concentration notes	b) Akzeptanzkonzentration assoziiert mit Risiko 4:10000
TRGS 910 Tolerance concentration (Volume conc.)	2 ppm
TRGS 910 Tolerance concentration (Weight conc.)	5 mg/m ³
TRGS 910 Tolerance concentration excess factor	8
TRGS 910 Equivalence value for tolerance concentration	2900 µg/g creatinine 80 µg/g creatinine
TRGS 910 Equivalence value for acceptable concentration	600 µg/g creatinine 10 µg/g creatinine
TRGS 910 Parameter	3,4- Dihydroxybutyl-merkaptursäure (DHBMA) 2-Hydroxy-3-butenyl-merkaptursäure (MHBMA)
TRGS 910 Testing material	U - Urin
TRGS 910 Testing time	b - Expositionsende bzw. Schichtende, c - Bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten
TRGS 910 Regulatory reference	TRGS 910

Hungary - Occupational Exposure Limits

Local name	1,3-BUTADIÉN
AK-érték	2.2 mg/m ³
Megjegyzések (HU)	k(1A) (rákkeltő), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat); EU6 (2019/130 EU irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről

Poland - Occupational Exposure Limits

Local name	Buta-1,3-dien
NDS (mg/m ³)	2.2 mg/m ³

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1,3-butadiene (106-99-0)	
Regulatory reference	Dz. U. 2020 poz. 61
Romania - Occupational Exposure Limits	
Local name	1,3 Butadienă
OEL TWA (mg/m ³)	2.2 mg/m ³
OEL TWA (ppm)	1 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 157/2020)
Spain - Occupational Exposure Limits	
Local name	1,3-Butadieno
VLA-ED (mg/m ³)	4.5 mg/m ³
VLA-ED (ppm)	2 ppm
Notes	C1A (Carcinógeno para el hombre), M1B (Sustancias de las que se considera que inducen mutaciones hereditarias en las células germinales humanas), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido), VLB® (Agente químico que tiene Valor Límite Biológico).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2019. INSHT
Spain - Biological limit values	
Local name	1,3-Butadieno
Spain - BLV	2.5 mg/l Parámetro: Acido 1,2-Dihidroxitilmercaptúrico - Medio: Orina - Momento de muestreo: Final de la jornada laboral - Notas: S (Significa que el indicador biológico es un indicador de exposición al agente químico en cuestión, pero la interpretación cuantitativa de su medida es ambigua (semicuantitativa). Estos indicadores biológicos deben utilizarse como una prueba de selección (screening) cuando no se pueda realizar una prueba cuantitativa o usarse como prueba de confirmación, si la prueba cuantitativa no es específica y el origen del determinante es dudoso), F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB) 2.5 pmol/g hemoglobina Parámetro: Mezcla de 1-N y 2-N-(hidroxibutenil) valina aductos de hemoglobina (Hb) - Medio: Sangre - Momento de muestreo: No crítico - Notas: S (Significa que el indicador biológico es un indicador de exposición al agente químico en cuestión, pero la interpretación cuantitativa de su medida es ambigua (semicuantitativa). Estos indicadores biológicos deben utilizarse como una prueba de selección (screening) cuando no se pueda realizar una prueba cuantitativa o usarse como prueba de confirmación, si la prueba cuantitativa no es específica y el origen del determinante es dudoso)
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2019. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	Buta-1,3-diene
WEL TWA (mg/m ³)	2.2 mg/m ³
WEL TWA (ppm)	1 ppm
Remark (WEL)	Carc (Capable of causing cancer and/or heritable genetic damage)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

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Butane (106-97-8)	
Belgium - Occupational Exposure Limits	
Local name	Butane, tous isomères: n-butane # Butaan, alle isomeren: n-butaan
Short time value (mg/m ³)	2370 mg/m ³
Short time value (ppm)	980 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 21/01/2020
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	Butan
Occupational exposure limit value (mg/m ³)	2400 mg/m ³
Occupational exposure limit value (ppm)	1000 ppm
Limitation of exposure peaks	4(II)
TRGS 900 Remark	DFG
TRGS 900 Regulatory reference	TRGS900
Hungary - Occupational Exposure Limits	
Local name	n-BUTÁN
AK-érték	2350 mg/m ³
CK-érték	9400 mg/m ³
Megjegyzések (HU)	N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Poland - Occupational Exposure Limits	
Local name	Butan (n-butan)
NDS (mg/m ³)	1900 mg/m ³
NDSCh (mg/m ³)	3000 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Spain - Occupational Exposure Limits	
Local name	Butano
VLA-ED (ppm)	1000 ppm Hidrocarburos alifáticos alcanos (C1 – C4) y sus mezclas, gases (Butano; Etano; Metano; Propano)
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2019. INSHT
United Kingdom - Occupational Exposure Limits	
Local name	Butane
WEL TWA (mg/m ³)	1450 mg/m ³
WEL TWA (ppm)	600 ppm
WEL STEL (mg/m ³)	1810 mg/m ³
WEL STEL (ppm)	750 ppm
Remark (WEL)	Carc (Capable of causing cancer and/or heritable genetic damage, only applies if Butane contains more than 0.1% of buta-1,3-diene)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

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Personal protective equipment:

Insulated gloves. Protective goggles. Protective clothing. High vapour/gas concentration: self-contained respirator.

Materials for protective clothing:

GIVE GOOD RESISTANCE: chlorosulfonated polyethylene. leather. nitrile rubber. polyurethane. tetrafluoroethylene. GIVE LESS RESISTANCE: nitrile rubber. viton. neoprene/SBR. nitrile rubber/PVC. GIVE POOR RESISTANCE: butyl rubber. chloroprene rubber. natural rubber. PVC. styrene-butadiene rubber

Hand protection:

Insulated gloves

Eye protection:

Protective goggles (EN 166)

Skin and body protection:

Protective clothing (EN 14605 or EN 13034)

Respiratory protection:

High vapour/gas concentration: self-contained respirator

Personal protective equipment symbol(s):



Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Liquefied gas.
Molecular mass	: 58.12 g/mol
Colour	: Colourless.
Odour	: Pure substance is odourless. Commercial/unpurified substance: mild odour. Commercial/unpurified substance: unpleasant odour.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -138.3 °C
Freezing point	: No data available
Boiling point	: -0.5 °C
Flash point	: -60 °C (1013 hPa)
Critical temperature	: 152 °C
Auto-ignition temperature	: 287 °C (1013 hPa)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Extremely flammable gas.
Vapour pressure	: 2100 hPa (20 °C)
Vapour pressure at 50 °C	: 4900 hPa
Critical pressure	: 37970 hPa
Relative vapour density at 20 °C	: 2.03
Relative density	: 0.58 (0 °C)
Density	: 579 kg/m ³ (0 °C)

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Solubility	: Insoluble in water. Soluble in ethanol. Soluble in ether. Soluble in chloroform. Water: 0.0061 g/100ml (20 °C) Ethanol: > 10 g/100ml Ether: > 10 g/100ml
Partition coefficient n-octanol/water (Log Pow)	: 2.89 (Experimental value)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 0.007 – 0.011 mPa·s (27 °C, Test data)
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1.8 – 8.4 vol % 37 – 210 g/m ³
Lower explosive limit (LEL)	: 1.8 vol %
Upper explosive limit (UEL)	: 8.4 vol %

9.2. Other information

Minimum ignition energy	: 0.25 mJ
Specific conductivity	: < 10000 pS/m
VOC content	: 100 %
Other properties	: Gas/vapour heavier than air at 20°C. Neutral reaction. May generate electrostatic charges.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with (strong) oxidizers: (increased) risk of fire/explosion. Reacts with (some) halogens.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Extremely flammable liquefied gas. Can form explosive mixtures with air.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

Oxidizing materials. Combustible materials. oxygen. halogens (F, Cl, Br, I). Hydrogen halogenides. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable
Serious eye damage/irritation	: Not classified pH: Not applicable
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified

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STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential adverse human health effects and symptoms	: Odour threshold is well above the exposure limit. May cause frostbites. Large spills/in enclosed spaces: risk of oxygen deficiency. May cause frostbites.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.
Ecology - air	: Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water	: Toxic to crustacea. Not harmful to fishes. No water pollutant (surface water). Toxic to algae.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Not classified

n-BUTANE FRACTION (106-97-8)

LC50 fish 1	> 1000 mg/l (96 h, Pimephales promelas, QSAR)
EC50 72h algae (1)	5.3 – 5.5 mg/l (Algae, QSAR)

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

LC50 fish 1	45 mg/l Test organisms (species): Pimephales promelas
EC50 Daphnia 1	33 mg/l Test organisms (species): Daphnia magna
EC50 72h algae (1)	33 mg/l Test organisms (species): other:algae

12.2. Persistence and degradability

n-BUTANE FRACTION (106-97-8)

Persistence and degradability	Readily biodegradable in water.
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12.3. Bioaccumulative potential

n-BUTANE FRACTION (106-97-8)

Partition coefficient n-octanol/water (Log Pow)	2.89 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

n-BUTANE FRACTION (106-97-8)

Surface tension	< 0.1 N/m (0 °C)
Ecology - soil	Not applicable (gas).

12.5. Results of PBT and vPvB assessment

n-BUTANE FRACTION (106-97-8)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

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12.6. Other adverse effects

No additional information available






SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Refer to manufacturer/supplier for information on recovery/ recycling.
Additional information	: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
European List of Waste (LoW) code	: 15 01 10* - packaging containing residues of or contaminated by dangerous substances 16 05 04* - gases in pressure containers (including halons) containing dangerous substances

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
UN 1011	UN 1011	UN 1011	UN 1011	UN 1011
14.2. UN proper shipping name				
Butane	butane	Butane	Butane	Butane
Transport document description				
UN 1011 Butane, 2.1, (B/D)	UN 1011 butane, 2.1	UN 1011 Butane, 2.1	UN 1011 Butane, 2.1	UN 1011 Butane, 2.1
14.3. Transport hazard class(es)				
2.1	2.1	2.1	2.1	2.1
				
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				



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14.6. Special precautions for user

Overland transport

Transport regulations (ADR)	: Subject to the provisions
Classification code (ADR)	: 2F
Hazard identification number (Kemler No.)	: 23
Orange plates	:  
Tunnel restriction code (ADR)	: B/D
EAC code	: 2YE

Transport by sea

Transport regulations (IMDG)	: Subject to the provisions
EmS-No. (Fire)	: F-D
EmS-No. (Spillage)	: S-U

Air transport

Transport regulations (IATA)	: Subject to the provisions
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Inland waterway transport

Classification code (ADN)	: 2F
Carriage permitted (ADN)	: T

Rail transport

Transport regulations (RID)	: Subject to the provisions
Classification code (RID)	: 2F

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

Reference code	Applicable on	Entry title or description
40.	n-BUTANE FRACTION ; 1,3-butadiene	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

n-BUTANE FRACTION is not on the REACH Candidate List

n-BUTANE FRACTION is not on the REACH Annex XIV List

n-BUTANE FRACTION is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

n-BUTANE FRACTION is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

VOC content : 100 %

15.1.2. National regulations

Germany

Employment restrictions	: Observe restrictions according Act on the Protection of Working Mothers (MuSchG) Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)
Water hazard class (WGK)	: WGK nwg, Non-hazardous to water (Classification according to AwSV; ID No. 561)
Hazardous Incident Ordinance (12. BImSchV)	: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

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Technical Instructions on Air Quality Control (TA Luft) : 5.2.5 Organic Substances

Denmark

Class for fire hazard : Class I-1

Store unit : 1 liter

Classification remarks : F+ <Flam. Gas 1; Press. Gas (Liq.)>; Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required.

SECTION 16: Other information

Indication of changes:

Version	Date of change	Section	Comments
1.0	16/03/2010	All	recommendations of Regulations (EC) #1907/2006
2.0	25/10/2010	All	Version was created after registration
2.1	07/02/2011	8I	Section was updated
2.2	02/10/2014	2-16	Sections were updated
2.3	17/05/2016	Title, 1.3	Company name of the Supplier was changed
3.0	21/01/2019	1-16, Annex	SDS have been corrected in according to new data of Registration dossier, Chemical Safety Report and new Transport information
3.1	07/02/2020	Title, 1.1	Product trade name has been modified
4.0	31/07/2020	All	All sections were updated, the document format was changed.
4.1	21/12/2020	1.3, 1.4	Company name of the Supplier was changed

Full text of H- and EUH-statements:

Flam. Gas 1	Flammable gases, Category 1
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

Full text of use descriptors

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article
ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

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ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
PC13	Fuels
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC11	Non-industrial spraying
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC20	Use of functional fluids in small devices
PROC21	Low energy manipulation and handling of substances bound in/on materials or articles
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
SU0	Other
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.