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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

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

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP)



Signal word

: Danger

Hazard statements (CLP)

: H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
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 - In case of leakage, eliminate all ignition sources.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

Precautionary statements (CLP)

Listed on CLP Annex VI

: EC Index-No.: 649-202-00-6

2.3. Other hazards

Other hazards

: Results of PBT and vPvB assessment : This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Comments

: * Note K : The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w 1,3-butadiene (Einecs No 203-450-8), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P210-P403 shall apply.

Substance name


: Propane - Butane Mixture

CAS-No.

: 68476-85-7

EC-No.

: 270-704-2

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EC Index : 649-202-00-6

| Substance name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|---|-------|---|
| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (*) | CAS-No.: 68476-85-7 EC-No.: 270-704-2 EC Index: 649-202-00-6 REACH-no: 01-2119485911-31-0009 | ≤ 100 | Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350 |
| 1,3-Butadiene | CAS-No.: 106-99-0 EC-No.: 203-450-8 EC Index: 601-013-00-X | < 0,1 | Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350 |

Full text of H- and EUH-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures


| | |
|-------------------|---|
| Additional advice | : First aider: Pay attention to self-protection!. Show this safety data sheet to the doctor in attendance. In case of doubt or persistent symptoms, consult always a physician. Concerning personal protective equipment to use, see section 8. Never give anything by mouth to an unconscious person. Give oxygen or artificial respiration as needed. |
| Inhalation | : Keep at rest. Give oxygen or artificial respiration if necessary. Remove casualty to fresh air and keep warm and at rest. In case of doubt or persistent symptoms, consult always a physician. |
| Skin contact | : Remove contaminated clothing and shoes. Gently wash with plenty of soap and water. In case of doubt or persistent symptoms, consult always a physician. In case of frostbite, wash with plenty of water; do not remove clothing. Wash contaminated clothing before reuse. Get medical advice/attention. |
| Eyes contact | : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. In case of doubt or persistent symptoms, consult always a physician. |
| Ingestion | : Rinse mouth immediately and drink plenty of water. Get medical advice/attention. |

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

| | |
|--------------|---|
| Inhalation | : May be irritating. The following symptoms may occur: Dizziness, Headache, Nausea, Vomiting. |
| Skin contact | : May be irritating. The following symptoms may occur: Can cause frostbite. |
| Eyes contact | : May be irritating. The following symptoms may occur: Can cause frostbite. |
| Ingestion | : Ingestion unlikely. |

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

Treat symptomatically.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. dry extinguishing powder. carbon dioxide (CO₂), powder, alcohol-resistant foam, water spray.

Unsuitable extinguishing media : Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Extremely flammable gas. Heating may cause an explosion. Vapours may form explosive mixture with air. Vapours are heavier than air and may spread along floors. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours. Heating will cause a rise in pressure with a risk of bursting. Container may explode if heated.

Hazardous decomposition products in case of fire : Carbon oxides (CO, CO₂).

5.3. Advice for firefighters

Firefighting instructions : Evacuate area. Use water spray or fog for cooling exposed containers. Contain the extinguishing fluids by bunding. Prevent fire fighting water from entering the environment. Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus.

Other information : Do not allow run-off from fire-fighting to enter drains or water courses. Dispose of waste in accordance with environmental legislation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

For non-emergency personnel : Stay upwind/keep distance from source. Provide adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe gas. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed. Use explosion-proof equipment. Use only non-sparking tools.

6.1.2. For emergency responders


For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Leave evaporate and disperse. Hose down gases, fumes and/or dust with water. All processes must be supervised by specialists or authorised personnel. This material and its container must be disposed of in a safe way, and as per local legislation.

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6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Concerning disposal elimination after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling

: Extremely cold liquid and gas under pressure. Causes severe frostbite. Provide adequate ventilation. Do not breathe gas. Avoid contact with skin, eyes and clothing. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Keep away from heat and direct sunlight. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tight closed. Take any precaution to avoid mixing with Incompatible materials, Refer to Section 10 on Incompatible Materials. Ensure proper process control to avoid excess waste discharge (temperature, concentration, pH, time). Avoid release to the environment. Ground/bond container and receiving equipment. Use explosion-proof equipment. Use only non-sparking tools.

Hygiene measures

: Keep good industrial hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feedingstuffs. Remove contaminated clothes. Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: Gases under pressure. Liquefied gas. Keep container tightly closed. Store in a dry, cool and well-ventilated place. Do not store near or with any of the incompatible materials listed in section 10. Take precautionary measures against static discharge.

Incompatible materials

: Strong oxidizing agents.

Heat and ignition sources

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight.

Special rules on packaging

: Containers which are opened should be properly resealed and kept upright to prevent leakage. Keep in properly labelled containers. Do not pierce or burn, even after use. Do not puncture or incinerate, even when empty.

Packaging materials

: Keep only in the original container.

Germany

German storage class (LGK)

: LGK 2A - Gases (except aerosol dispensers and lighters)


Switzerland

Storage class (LK)

: LK 2 - Liquefied or pressurized gases

7.3. Specific end use(s)

For further information see section 1.


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SECTION 8: Exposure controls/personal protection


8.1. Control parameters

8.1.1 National occupational exposure and biological limit values


| | |
|---|---|
| 1,3-Butadiene (106-99-0) | |
| EU - Indicative Occupational Exposure Limit (IOEL) | |
| IOEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Austria - Occupational Exposure Limits | |
| TRK (OEL TWA) | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | Group A1 Carcinogen |
| Belgium - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | Carcinogen |
| Bulgaria - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Croatia - Occupational Exposure Limits | |
| GVI (OEL TWA) | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | Carcinogen Category 1A, Mutagen Category 1B |
| Cyprus - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Czech Republic - Occupational Exposure Limits | |
| PEL (OEL TWA) | 10 mg/m ³ |
| OEL chemical category | Potential for cutaneous absorption |
| Denmark - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL STEL | 4,4 mg/m ³ |
| | 2 ppm |
| Estonia - Occupational Exposure Limits | |
| OEL TWA | 1 mg/m ³ |
| | 0,5 ppm |

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| | |
|--|---|
| 1,3-Butadiene (106-99-0) | |
| OEL STEL | 10 mg/m ³ |
| | 5 ppm |
| OEL chemical category | Carcinogenic substance |
| Finland - Occupational Exposure Limits | |
| HTP (OEL TWA) | 2,2 mg/m ³ |
| | 1 ppm |
| France - Occupational Exposure Limits | |
| VME (OEL TWA) | 2,2 mg/m ³ (restrictive limit) |
| | 1 ppm (restrictive limit) |
| OEL chemical category | Carcinogen category 1A, Mutagen category 1B |
| Germany - Occupational Exposure Limits (TRGS 900) | |
| Occupational exposure limit value (mg/m ³) (TRGS900) | 0,5 - 5 mg/m ³ |
| Occupational exposure limit value (ppm) (TRGS900) | 0,2 - 2 ppm |
| Germany - Occupational Exposure Limits (Generic OEL data) | |
| TRGS 910 | Risk-related concept of measures for activities involving carcinogenic hazardous substances : 0,5 - 5 mg/m ³ & 0,2 - 2 ppm |
| Greece - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Hungary - Occupational Exposure Limits | |
| AK (OEL TWA) | 2,2 mg/m ³ |
| OEL chemical category | Carc. 1A - Known Carcinogen |
| Ireland - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL STEL | 6,6 mg/m ³ (calculated) |
| | 3 ppm (calculated) |
| Italy - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Latvia - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| Lithuania - Occupational Exposure Limits | |
| IPRV (OEL TWA) | 1 mg/m ³ |


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| | |
|---|--|
| 1,3-Butadiene (106-99-0) | |
| | 0,5 ppm |
| TPRV (OEL STEL) | 10 mg/m ³ |
| | 5 ppm |
| OEL chemical category | Mutagen, Carcinogen |
| Netherlands - Occupational Exposure Limits | |
| TGG-8u (OEL TWA) | 2 mg/m ³ |
| | 0,89 ppm |
| Poland - Occupational Exposure Limits | |
| NDS (OEL TWA) | 2,2 mg/m ³ |
| Portugal - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | A2 - Suspected Human Carcinogen |
| Romania - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | C1A |
| Slovenia - Occupational Exposure Limits | |
| OEL TWA | 2,2 mg/m ³ |
| | 1 ppm |
| OEL chemical category | Category 1B, Category 1A |
| Spain - Occupational Exposure Limits | |
| VLA-ED (OEL TWA) | 2,2 mg/m ³ (manufacturing, commercialization and use restrictions according to REACH) |
| | 1 ppm (manufacturing, commercialization and use restrictions according to REACH) |
| OEL chemical category | C1A, M1B |
| Spain - Biological limit values | |
| BLV | 2,5 mg/l Parameter: 1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane - Medium: urine - Sampling time: end of shift 2,5 pmol/g hemoglobin Parameter: Mixture of N-1 and N-2-(hydroxybutenyl)valine - Medium: blood - Sampling time: not critical |
| Sweden - Occupational Exposure Limits | |
| NGV (OEL TWA) | 1 mg/m ³ |
| | 0,5 ppm |
| KGV (OEL STEL) | 10 mg/m ³ |
| | 5 ppm |
| OEL chemical category | Carcinogen |

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|--|---|
| 1,3-Butadiene (106-99-0) | |
| United Kingdom - Occupational Exposure Limits | |
| WEL TWA (OEL TWA) | 2,2 mg/m ³ |
| | 1 ppm |
| WEL STEL (OEL STEL) | 6,6 mg/m ³ (calculated) |
| | 3 ppm (calculated) |
| WEL chemical category | Capable of causing cancer and/or heritable genetic damage |
| Norway - Occupational Exposure Limits | |
| Grenseverdi (OEL TWA) | 2,2 mg/m ³ |
| | 1 ppm |
| Korttidsverdi (OEL STEL) | 4,4 mg/m ³ (value calculated) |
| | 3 ppm (value calculated) |
| OEL chemical category | Carcinogen |
| Switzerland - Occupational Exposure Limits | |
| MAK (OEL TWA) | 4,4 mg/m ³ |
| | 2 ppm |
| OEL chemical category | Category C1A carcinogen, Category 1B mutagen |
| USA - ACGIH - Occupational Exposure Limits | |
| ACGIH® TLV® TWA | 2 ppm |
| ACGIH chemical category | Suspected Human Carcinogen |
| USA - ACGIH - Biological Exposure Indices | |
| BEI | 2,5 mg/l Parameter: 1,2-Dihydroxy-4-(N-acetylcysteinyl)-butane - Medium: urine - Sampling time: end of shift (background, semi-quantitative) 2,5 pmol/g hemoglobin Parameter: Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin adducts - Medium: blood - Sampling time: not critical (semi-quantitative) |

| | |
|---|---|
| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (68476-85-7) | |
| Belgium - Occupational Exposure Limits | |
| OEL TWA | 1826 mg/m ³ |
| | 1000 ppm |
| OEL chemical category | Carcinogen |
| Croatia - Occupational Exposure Limits | |
| GVI (OEL TWA) | 1750 mg/m ³ (applies if not containing ≥0.1% 1,3-Butadiene) |
| | 1000 ppm (applies if not containing ≥0.1% 1,3-Butadiene) |
| KGVI (OEL STEL) | 2180 mg/m ³ (applies if not containing ≥0.1% 1,3-Butadiene) |
| | 1250 ppm (applies if not containing ≥0.1% 1,3-Butadiene) |
| OEL chemical category | Carcinogen Category 1A applies if not containing ≥0.1% 1,3-Butadiene, Mutagen Category 1B applies if not containing ≥0.1% 1,3-Butadiene |

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| | |
|---|---|
| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (68476-85-7) | |
| Czech Republic - Occupational Exposure Limits | |
| PEL (OEL TWA) | 1800 mg/m ³ (in original source under this CAS number Propan-butan (LPG)) |
| Greece - Occupational Exposure Limits | |
| OEL TWA | 2250 mg/m ³ |
| | 1250 ppm |
| OEL STEL | 2250 mg/m ³ |
| | 1250 ppm |
| Portugal - Occupational Exposure Limits | |
| OEL TWA | 1000 ppm |
| United Kingdom - Occupational Exposure Limits | |
| WEL TWA (OEL TWA) | 1750 mg/m ³ |
| | 1000 ppm |
| WEL STEL (OEL STEL) | 2180 mg/m ³ |
| | 1250 ppm |
| WEL chemical category | Capable of causing cancer and/or heritable genetic damage containing >0.1% Buta-1,3-diene |
| USA - ACGIH - Occupational Exposure Limits | |
| ACGIH chemical category | Simple asphyxiant See Appendix F: Minimal Oxygen Content |

8.1.2. Recommended monitoring procedures

| | |
|---------------------------|---|
| Monitoring methods | |
| Monitoring methods | Personal air monitoring. Room air monitoring. |

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC


Additional information : Personal air monitoring. Room air monitoring

8.1.5. Control banding

No additional information available

8.2. Exposure controls

Engineering measure(s) : Closed system. Provide adequate ventilation. Use only in area provided with appropriate exhaust ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Take precautionary measures against static discharge. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Use only explosion-proof equipment. Organisational measures to prevent/limit releases, dispersion and exposure. See Section 7 for information on safe handling .


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| Personal protective equipment | : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. |
| Hand protection | : Wear suitable gloves. Suitable material: cold insulating gloves (EN 511). Breakthrough time : refer to the recommendations of the supplier. Thickness of the glove material: Not determined. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. |
| Eye protection | : During splash contact: Use suitable eye protection (EN166): face shield |
| Body protection | : Wear suitable protective clothing. Overalls, apron and boots recommended. |
| Respiratory protection | : In case of insufficient ventilation, wear suitable respiratory equipment. full face mask (DIN EN 136). Filter type: ABEK (EN 14387). The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used. |
| Thermal hazard protection | : cold insulating gloves (EN 511). Not required for normal conditions of use. Use dedicated equipment. |
| Environmental exposure controls | : Avoid release to the environment. Comply with applicable Community environmental protection legislation. |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | : Gas |
| Colour | : Colourless. |
| Appearance | : Press. Gas (Liq.). liquefied gas. |
| Odour | : Characteristic. |
| Odour threshold | : No data available |
| Melting / freezing point | : < -138 °C literature value |
| Freezing point | : Not applicable |
| Initial boiling point and boiling range | : -165 – -0,5 °C literature value |
| Flammability | : Extremely flammable gas. |
| Explosive properties | : Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule. |
| Oxidising properties | : Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties. |
| Lower explosion limit | : 1,9 – 5,3 vol % literature value |
| Upper explosion limit | : 8,5 – 15 vol % literature value |
| Flash point | : < -56 °C literature value |
| Auto-ignition temperature | : 287 – 540 °C literature value |
| Decomposition temperature | : No data available |
| pH | : Not applicable |
| Kinematic viscosity | : No additional information available |
| Solubility | : Soluble in organic solvents. Water: 0,024 – 0,061 g/l at 20 °C |

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Partition coefficient n-octanol/water (Log Kow) : $\leq 2,8$
 Vapour pressure : ≤ 1550 kPa (40°C)
 Vapour pressure at 50°C : Not available
 Density : Not applicable
 Relative density : 0,56 g/cm³ (SRPS EN ISO 8973)
 Vapour density : $> 1,5$ (Air = 1.0)
 Particle characteristics : Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Gas group : Compressed gas

SECTION 10: Stability and reactivity

10.1. Reactivity

Extremely flammable gas. Reference to other sections 10.4 & 10.5.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts vigorously with strong oxidizers and acids. Vapours may form explosive mixture with air. Reference to other sections 10.4 & 10.5.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from sunlight. See Section 7 for information on safe handling.

10.5. Incompatible materials

Strong oxidizing agents. See Section 7 for information on safe handling.


10.6. Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. Carbon oxides (CO, CO₂). Reference to other sections 5.2.

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)
 Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)
 Acute toxicity (inhalation) : Not classified (Based on available data, the classification criteria are not met)

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| 1,3-Butadiene (106-99-0) | |
|---------------------------------|--|
| LD50/oral/rat | 5480 mg/kg |
| LC50/inhalation/4h/rat | 285 g/m ³ (Exposure time: 4h) |
| LC50/inhalation/4h/rat (ppm) | 12800 ppm/4h Gas |
| LC50 Inhalation - Rat (Vapours) | 285 mg/l/4h |

| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (68476-85-7) | |
|---|----------|
| LC50/inhalation/4h/rat | 658 mg/l |

| | |
|-----------------------------------|---|
| Skin corrosion/irritation | : Not classified (Based on available data, the classification criteria are not met) pH: Not applicable |
| Serious eye damage/irritation | : Not classified (Based on available data, the classification criteria are not met) pH: Not applicable |
| Respiratory or skin sensitisation | : Not classified (Based on available data, the classification criteria are not met) |
| Germ cell mutagenicity | : Not classified (Based on available data, the classification criteria are not met) |
| Carcinogenicity | : Not classified (Based on available data, the classification criteria are not met) |

| 1,3-Butadiene (106-99-0) | |
|---------------------------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |

| | |
|------------------------|---|
| Reproductive toxicity | : Not classified (Based on available data, the classification criteria are not met) |
| STOT-single exposure | : Not classified (Based on available data, the classification criteria are not met) |
| STOT-repeated exposure | : Not classified (Based on available data, the classification criteria are not met) |
| Aspiration hazard | : Not applicable |

| Propane - Butane Mixture (68476-85-7) | |
|--|-------------------------------------|
| Kinematic viscosity | No additional information available |


11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

| | |
|--|---|
| Adverse health effects caused by endocrine disrupting properties | : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 |
|--|---|

11.2.2. Other information

| | |
|-------------------|---|
| Other information | : Symptoms related to the physical, chemical and toxicological characteristics, For further information see section 4 |
|-------------------|---|

| | | |
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SECTION 12: Ecological information

12.1. Toxicity

| | |
|---|---|
| Environmental properties | : Ecological injuries are not known or expected under normal use. |
| Hazardous to the aquatic environment, short-term (acute) | : Not classified |
| Hazardous to the aquatic environment, long-term (chronic) | : Not classified |

| 1,3-Butadiene (106-99-0) | |
|------------------------------------|----------------------------|
| EC50 - Other aquatic organisms [1] | 24- 33 mg/l Invertebrates. |
| ErC50 algae | 11- 33 mg/l algae |

| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (68476-85-7) | |
|---|--------------|
| LC50 - Fish [1] | > 24,11 mg/l |
| EC50 - Crustacea [1] | > 14,22 mg/l |
| ErC50 algae | > 7,71 mg/l |

12.2. Persistence and degradability

| Propane - Butane Mixture (68476-85-7) | |
|---------------------------------------|------------------------|
| Persistence and degradability | Readily biodegradable. |

12.3. Bioaccumulative potential


| Propane - Butane Mixture (68476-85-7) | |
|---|--------------------------------------|
| Partition coefficient n-octanol/water (Log Kow) | ≤ 2,8 |
| Bioaccumulative potential | No additional information available. |

| 1,3-Butadiene (106-99-0) | |
|---------------------------------------|--------------------------|
| BCF - Fish [1] | 13 – 19,1 |
| Partition coefficient n-octanol/water | 1,99 (at 25 °C (at pH 7) |

| Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) (68476-85-7) | |
|---|-------|
| Partition coefficient n-octanol/water | ≤ 2,8 |

12.4. Mobility in soil

| Propane - Butane Mixture (68476-85-7) | |
|---------------------------------------|--------------------|
| Mobility in soil | No data available |
| Ecology - soil | No data available. |

| | | |
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12.5. Results of PBT and vPvB assessment

| Propane - Butane Mixture (68476-85-7) | |
|---------------------------------------|--|
| Results of PBT assessment | This substance does not meet the PBT/vPvB criteria of REACH, annex XIII. |

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

Other adverse effects : No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods


Product/Packaging disposal recommendations : Avoid release to the environment. Dispose of empty containers and wastes safely. See Section 7 for information on safe handling. Refer to manufacturer/supplier for information on recovery/recycling. Recycling is preferred to disposal or incineration. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations. Handle contaminated packages in the same way as the substance itself. Packaging contaminated by the product : Do not pierce or burn, even after use. Never use pressure to empty container.






European waste catalogue (2001/573/EC, 75/442/EEC, 91/689/EEC) : This material and its container must be disposed of as hazardous waste. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

SECTION 14: Transport information

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

| ADR | IMDG | IATA | ADN | RID |
|--|---|--|---|---|
| 14.1. UN number or ID number | | | | |
| 1965 | 1965 | 1965 | 1965 | 1965 |
| 14.2. UN proper shipping name | | | | |
| HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)) | HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)) | Hydrocarbon gas mixture, liquefied, n.o.s. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)) | HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)) | HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)) |
| Transport document description | | | | |
| UN 1965 HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)), 2.1, (B/D) | UN 1965 HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)), 2.1 | UN 1965 Hydrocarbon gas mixture, liquefied, n.o.s. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)), 2.1 | UN 1965 HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)), 2.1 | UN 1965 HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene)), 2.1 |


| | | |
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| ADR | IMDG | IATA | ADN | RID |
|--|---|---|--|---|
| 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 | | | | |

14.6. Special precautions for user


Special precautions for user : No data available

- Overland transport

Classification code (ADR) : 2F
 Special provisions : 274, 392, 583, 652, 662, 674
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E0
 Packing instructions (ADR) : P200
 Mixed packing provisions (ADR) : MP9
 Portable tank and bulk container instructions (ADR) : (M), T50
 Tank code (ADR) : PxBN(M)
 Tank special provisions (ADR) : TA4, TT9
 Vehicle for tank carriage : FL
 Transport category (ADR) : 2
 Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
 Special provisions for carriage - Operation (ADR) : S2, S20
 Hazard identification number (Kemler No.) : 23
 Orange plates : 
 Tunnel restriction code : B/D
 EAC code : 2YE

- Transport by sea

Special provisions (IMDG) : 274, 392
 Limited quantities (IMDG) : 0
 Excepted quantities (IMDG) : E0
 Packing instructions (IMDG) : P200

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Tank instructions (IMDG) : T50
 EmS-No. (Fire) : F-D
 EmS-No. (Spillage) : S-U
 Stowage category (IMDG) : E
 Stowage and handling (IMDG) : SW2
 Properties and observations (IMDG) : Liquefied flammable hydrocarbon gas obtained from natural gas or by distillation of mineral oils or coal, etc. May contain propane, cyclopropane, propylene, butane, butylene, etc., in varying proportions. Heavier than air.

- Air transport


PCA Excepted quantities (IATA) : E0
 PCA Limited quantities (IATA) : Forbidden
 PCA limited quantity max net quantity (IATA) : Forbidden
 PCA packing instructions (IATA) : Forbidden
 PCA max net quantity (IATA) : Forbidden
 CAO packing instructions (IATA) : 200
 CAO max net quantity (IATA) : 150kg
 Special provisions (IATA) : A1
 ERG code (IATA) : 10L

- Inland waterway transport

Classification code (ADN) : 2F
 Special provisions (ADN) : 274, 392, 583, 662, 674
 Limited quantities (ADN) : 0
 Excepted quantities (ADN) : E0
 Carriage permitted (ADN) : T
 Equipment required (ADN) : PP, EX, A
 Ventilation (ADN) : VE01
 Number of blue cones/lights (ADN) : 1

- Rail transport

Classification code (RID) : 2F
 Special provisions (RID) : 274, 392, 583, 662, 674
 Limited quantities (RID) : 0
 Excepted quantities (RID) : E0
 Packing instructions (RID) : P200
 Mixed packing provisions (RID) : MP9
 Portable tank and bulk container instructions (RID) : T50(M)
 Tank codes for RID tanks (RID) : PxBN(M)
 Special provisions for RID tanks (RID) : TU38, TE22, TA4, TT9, TM6
 Transport category (RID) : 2
 Special provisions for carriage - Loading, unloading and handling (RID) : CW9, CW10, CW36
 Colis express (express parcels) (RID) : CE3
 Hazard identification number (RID) : 23

| | | |
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14.7. Maritime transport in bulk according to IMO instruments

Code: IBC : No data available.

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

| EU restriction list (REACH Annex XVII) | | |
|--|--|--|
| Reference code | Applicable on | Entry title or description |
| 28. | 1,3-Butadiene ; Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) | Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively. |
| 29. | 1,3-Butadiene ; Petroleum gas; Petroleum gases, liquefied (< 0,1% butadiene) | Substances which are classified as germ cell mutagen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 3 or Appendix 4, respectively. |
| 40. | Propane - Butane Mixture ; 1,3- Butadiene ; Petroleum gas; Petroleum gases, liquefied (< 0,1% 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. |

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (2024/590)


Not listed on the Ozone Depletion list (Regulation EU 2024/590)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

Explosives Precursors Regulation (EU 2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

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Drug Precursors Regulation (EC 273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

Detergent Regulation (648/2004/EC): Labelling of contents

Labelling for contents according to : Not applicable
regulation (EC) No. 648/2004

15.1.2. National regulations

France


| Occupational diseases | | | |
|------------------------|--|-------------|-------|
| Code | Description | | |
| RG 99 | Hemic diseases caused by 1,3-butadiene and all products containing it | | |
| Installations classées | | | |
| No ICPE | Désignation de la rubrique | Code Régime | Rayon |
| 4718.text | Gaz inflammables liquéfiés de catégorie 1 et 2 (y compris GPL) et gaz naturel (y compris biogaz affiné, lorsqu'il a été traité conformément aux normes applicables en matière de biogaz purifié et affiné, en assurant une qualité équivalente à celle du gaz naturel, y compris pour ce qui est de la teneur en méthane, et qu'il a une teneur maximale de 1 % en oxygène). La quantité totale susceptible d'être présente dans les installations y compris dans les cavités souterraines (strates naturelles, aquifères, cavités salines et mines désaffectées) étant : | | |
| 4718.1 | 1. Supérieure ou égale à 50 t Quantité seuil bas au sens de l'article R. 511-10 : 50 t. Quantité seuil haut au sens de l'article R. 511-10 : 200 t. | A | 1 |
| 4718.2 | 2. Supérieure ou égale à 6 t mais inférieure à 50 t Quantité seuil bas au sens de l'article R. 511-10 : 50 t. Quantité seuil haut au sens de l'article R. 511-10 : 200 t. | DC | 1 |

Germany

Water hazard class (WGK) : WGK 1, Slightly hazardous to water.
Major Accidents Ordinance (12. BImSchV) : Listed in the 12. BImSchV (Annex I) under: 2.1
- Quantity threshold for operational area under § 1 para. 1
- Sentence 1 : 50000 kg
- Sentence 2 : 200000 kg

Netherlands

Waterbezwaarlijkheid : B (5) - Weinig schadelijk voor in het water levende organismen
SZW-lijst van kankerverwekkende stoffen : Propane - Butane Mixture is listed
SZW-lijst van mutagene stoffen : Propane - Butane Mixture is listed
SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed

| | | |
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SZW-lijst van reprotoxische stoffen – : The substance is not listed
Ontwikkeling

Denmark

Class for fire hazard : Class I-1
Store unit : 1 liter
Classification remarks : F+ <Flam. Gas 1A; 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
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out


SECTION 16: Other information

Indication of changes:

| | | | |
|-----|--|----------|--|
| 1.3 | Details of the supplier of the safety data sheet | Modified | |
| 16 | Other information | Added | |

Abbreviations and acronyms:

| | |
|--|--|
| | DNEL = Derived No Effect Level |
| | DMEL = Derived Minimal Effect level |
| | PNEC = Predicted No Effect Concentration |
| | OEL-STEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs) |
| | TWA = time weighted average |
| | LC50 = Median lethal concentration |
| | LD50 = Median lethal dose |
| | LL50 = Median lethal level |
| | EC50 = Median Effective Concentration |
| | EL50 = Median effective level |
| | ErC50 = EC50 in terms of reduction of growth rate |
| | ErL50 = EL50 in terms of reduction of growth rate |
| | NOEL = no-observed-effect level |
| | NOEC = No observed effect concentration |
| | NOELR = No observed effect loading rate |
| | NOAEC = No observed adverse effect concentration |
| | NOAEL = No observed adverse effect level |
| | EWC = European waste catalogue |
| | NA = Not applicable |
| | N.O.S. = Not Otherwise Specified |
| | VOC = Volatile organic compounds |
| | mg/kg BW = mg/kg bodyweight |
| | QSAR = Quantitative structure-activity relationship (QSAR) |
| | ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin |
| | ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route |
| | CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC |
| | IATA = International Air Transport Association |
| | IMDG = International Maritime Dangerous Goods Code |
| | LEL = Lower Explosive Limit/Lower Explosion Limit |
| | UEL = Upper Explosive Limit/Upper Explosion Limit |
| | REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals |
| | WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act) |

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| | |
|--|--|
| | ABM = Algemene beoordelingsmethodiek |
| | BTT = Breakthrough time (maximum wearing time) |
| | NOEL: no-observed-effect level |
| | STOT = Specific Target Organ Toxicity |

Sources of key data used to compile the datasheet : ECHA (European Chemicals Agency). CSR = Chemical Safety Report. Supplier information.

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Hazard classification and labeling of petroleum substances in the European Economic Area, Concawe – 2025 (<http://www.concawe.eu>).

Full text of H- and EUH-statements:

| | |
|-------------------|---|
| Carc. 1A | Carcinogenicity, Category 1A |
| Flam. Gas 1A | Flammable gases, Category 1A |
| Muta. 1B | Germ cell mutagenicity, Category 1B |
| Press. Gas (Liq.) | Gases under pressure : Liquefied gas |
| H220 | Extremely flammable gas. |
| H280 | Contains gas under pressure; may explode if heated. |
| H340 | May cause genetic defects. |
| H350 | May cause cancer. |

According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

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