

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Fuel Gases, Liquefied (compressed)

Version 2.0

Revision Date: 11.08.2022

Former date: 15.04.2011

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

1.1 Product identifier

Trade name : Fuel Gases, Liquefied (compressed)

REACH Registration Number : 01-2119489781-24-XXXX

Substance name : Fuel gas

EC-No. : 270-667-2

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

Use of the Substance/Mixture : Raw material in chemical industry, Manufacture, Distribution, Formulation, Foaming (blowing) agents, Use in functional fluids, Fuel, Use in polymer production, Use in polymer processing

1.3 Details of the supplier of the safety data sheet

Manufacturer : Borealis AB
S-444 86 Stenungsund, Sweden
Telephone: +46 303 86000

Supplier : Borealis AG
Trabrennstrasse 6-8, 1020 Vienna, Austria
Telephone: +43 1 22400 0

E-mail address : sds@borealisgroup.com

1.4 Emergency telephone number

+46 303 87280 / +46 303 771643 Production leader, Cracker (24h)
112 Poison Information Centre, Sweden (24h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable gases, Category 1A H220: Extremely flammable gas.

Gases under pressure, Liquefied gas H280: Contains gas under pressure; may explode if

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heated.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

Precautionary statements : **Prevention:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P220 Keep away from clothing and other combustible materials.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 In case of leakage, eliminate all ignition sources.

Storage:

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Rapid evaporation of the product may cause frostbite.

Vapours can cause suffocation by reducing oxygen available for breathing.

Vapours may form explosive mixtures with air.

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SECTION 3: Composition/information on ingredients

3.1 Substances

| | | |
|-----------------|---|---|
| Substance name | : | Fuel gas |
| EC-No. | : | 270-667-2 |
| Chemical nature | : | A combination of light gases. It consists predominantly of hydrogen and/or low molecular weight hydrocarbons. |

Components

| Chemical name | CAS-No. EC-No. | Concentration (% w/w) | M-Factor, SCL, ATE |
|---|-------------------------|--------------------------|--------------------|
| Substance of unknown or variable composition, complex reaction products or biological material (UVCB) : | | | |
| Fuel gases; Petroleum gas | 68476-26-6 270-667-2 | <= 100 | |
| Contains : | | | |
| methane | 74-82-8 200-812-7 | > 60 - < 85 | |
| hydrogen | 1333-74-0 215-605-7 | > 15 - < 30 | |
| nitrogen | 7727-37-9 231-783-9 | > 2 - < 10 | |

SECTION 4: First aid measures

4.1 Description of first aid measures

| | | |
|------------------------|---|---|
| If inhaled | : | Move to fresh air. Do not leave the victim unattended. Keep patient warm and at rest. If unconscious, place in recovery position and seek medical advice. If breathing is difficult, give oxygen. |
| In case of eye contact | : | Remove contact lenses. Rinse immediately with plenty of water for at least 15 minutes. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist. |
| If swallowed | : | Not probable: |

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The product evaporates readily.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Inhalation may provoke the following symptoms:
Drowsiness
Suffocation
Skin contact may provoke the following symptoms:
Frostbite

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : There is no specific antidote available.
Treat frost-bitten areas as needed.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry powder, carbon dioxide, foam and water mist.

Unsuitable extinguishing media : Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Incomplete combustion may produce:
Carbon dioxide (CO₂), carbon monoxide (CO), dense black smoke.
Flash back possible over considerable distance.
Vapours may form explosive mixtures with air.
Do not allow run-off from fire fighting to enter drains or water courses.
Risk of explosion.

5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.

Further information : Attempt to stop leakage without personal risk.
If conditions permit, let fire burn itself out.
Cool containers/tanks with water spray.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Keep people away from and upwind of spill/leak.
Vapours can cause suffocation by reducing oxygen available for breathing.
Use personal protective equipment.
Eliminate all ignition sources if safe to do so.
Attempt to stop leakage without personal risk.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so.
Prevent product from entering environment and drains.
Observe the risk of explosion.
If major spillage occurs, contact the proper local authorities.

6.3 Methods and material for containment and cleaning up

Allow to evaporate.
Ensure adequate ventilation, especially in confined areas.

6.4 Reference to other sections

For disposal considerations see section 13., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Refill and handle product only in closed system.
Prevent leaks by checking valves, pipelines and joints regularly.
Avoid and prevent all spillage, contact and exposure.
Ensure adequate ventilation.

Advice on protection against fire and explosion : Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. Ensure adequate ventilation. High risk of fire in case of leakage.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep containers tightly closed in a cool, well-ventilated place.
Keep product and empty container away from heat and sources of ignition. Containers which are opened must be carefully resealed and kept upright to prevent leakage. No smoking.

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Advice on common storage : Keep away from incompatible materials.
See chapter 10.

7.3 Specific end use(s)

Specific use(s) : Reserved for industrial and professional use.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

| Substance name | End Use | Exposure routes | Potential health effects | Value |
|------------------------------------|----------------|-----------------|--------------------------|-------|
| Fuel Gases, Liquefied (compressed) | | | | |
| Remarks: | Not applicable | | | |

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

| Substance name | Environmental Compartment | Value |
|------------------------------------|---------------------------|-------|
| Fuel Gases, Liquefied (compressed) | | |
| Remarks: | Not applicable | |

8.2 Exposure controls

Personal protective equipment

Eye protection : Safety goggles or face-shield.
Equipment should conform to EN 166

Hand protection

Remarks : Cold-insulating gloves (e.g. nitrile rubber).

Skin and body protection : Wear suitable protective clothing and rubber boots.

Respiratory protection : In case of insufficient ventilation: Self-contained breathing apparatus.

Environmental exposure controls

General advice : Prevent further leakage or spillage if safe to do so. Prevent product from entering environment and drains. Observe the risk of explosion. If major spillage occurs, contact the proper local authorities.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | | |
|--|---|---|
| Physical state | : | Refrigerated liquefied gas |
| Colour | : | colourless |
| Odour | : | odourless |
| Odour Threshold | : | No data available |
| Melting point/range | : | -259 - -183 °C |
| Boiling point/boiling range | : | -161 °C Methane |
| Flammability | : | Extremely flammable. |
| Upper explosion limit / Upper flammability limit | : | Upper flammability limit 15 %(V) methane Upper explosion limit 75 %(V) hydrogen |
| Lower explosion limit / Lower flammability limit | : | Lower flammability limit 5 %(V) methane Lower flammability limit 4 %(V) hydrogen |
| Flash point | : | No data available |
| Decomposition temperature | : | Heating or fire can release toxic and irritating gases. |
| pH | : | No data available |
| Viscosity | | |
| Viscosity, dynamic | : | No data available |
| Viscosity, kinematic | : | No data available |
| Solubility(ies) | | |
| Water solubility | : | > 1 g/l |
| Solubility in other solvents | : | No data available |

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Vapour pressure : No data available

Relative density : No data available

Relative vapour density : 0,6
methane
0,07
hydrogen

Particle characteristics

Particle Size Distribution : Not applicable

9.2 Other information

Explosives : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Self-ignition : > 470 °C

Evaporation rate : No data available

Surface tension : Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Keep away from heat and sources of ignition.
Observe the risk of explosion.

10.5 Incompatible materials

Materials to avoid : Air
Oxygen

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Halogenated compounds
Strong oxidizing agents

10.6 Hazardous decomposition products

None.

SECTION 11: Toxicological information

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

Acute toxicity

Based on available data, the classification criteria are not met.

Components:

methane:

Acute oral toxicity : Remarks: Not applicable
(gaseous)
study technically not feasible

Acute inhalation toxicity : LC50: > 20 mg/l
Remarks: Acute toxicity:
low.

Acute dermal toxicity : Remarks: Not applicable
(gaseous)
study technically not feasible

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Remarks : Contact with liquid or refrigerated gas can cause cold burns
and frostbite.

Components:

methane:

Result : No skin irritation
Remarks : Contact with liquid or refrigerated gas can cause cold burns
and frostbite.

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Remarks : Contact with liquid or refrigerated gas can cause cold burns

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and frostbite.

Components:

methane:

Result : No eye irritation
Remarks : Contact with liquid or refrigerated gas can cause cold burns and frostbite.

Respiratory or skin sensitisation

Skin sensitisation

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Components:

methane:

Remarks : study technically not feasible (gaseous)

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

methane:

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)
Method: OECD Test Guideline 471
Result: negative
Remarks: In vitro tests did not show mutagenic effects

Genotoxicity in vivo : Remarks: No data available

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

methane:

Remarks : This information is not available.

Reproductive toxicity

Based on available data, the classification criteria are not met.

Components:

methane:

Effects on fertility :
Remarks: This information is not available.

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STOT - single exposure

Based on available data, the classification criteria are not met.

Components:

methane:

Remarks : study scientifically unjustified (gaseous)

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Components:

methane:

Exposure routes : Inhalation
Remarks : study scientifically unjustified (gaseous)

Exposure routes : Ingestion
Remarks : study scientifically unjustified (gaseous)

Exposure routes : Skin contact
Remarks : study scientifically unjustified (gaseous)

Aspiration toxicity

Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : Health injuries are not known or expected under normal use.

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SECTION 12: Ecological information

12.1 Toxicity

Components:

methane:

| | | |
|--|---|---|
| Toxicity to fish | : | 147,54 mg/l Exposure time: 96 h Test Type: Short term Method: QSAR |
| Toxicity to daphnia and other aquatic invertebrates | : | LC50 (Daphnia (water flea)): 69,43 mg/l Exposure time: 48 h Test Type: Short term Method: QSAR |
| Toxicity to algae/aquatic plants | : | 12,32 mg/l Exposure time: 96 h Method: QSAR |
| Toxicity to microorganisms | : | Remarks: No data available |
| Toxicity to fish (Chronic toxicity) | : | 7,66 mg/l Exposure time: 30 d Method: QSAR Remarks: No data available |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | 3,886 mg/l Exposure time: 30 d Method: QSAR Remarks: No data available |

12.2 Persistence and degradability

Product:

| | | |
|------------------|---|---|
| Biodegradability | : | Method: QSAR Remarks: Readily biodegradable. |
|------------------|---|---|

Components:

methane:

| | | |
|------------------|---|--|
| Biodegradability | : | Water Method: QSAR Remarks: Readily biodegradable. |
|------------------|---|--|

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12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Bioaccumulation not expected: Partition coefficient (n-octanol/water) log Pow < 3.

Components:

methane:

Bioaccumulation : Bioconcentration factor (BCF): 1,38
Remarks: Bioaccumulation not expected: Partition coefficient (n-octanol/water) log Kow < 3.

Partition coefficient: n-octanol/water : log Pow: 1,09 (20 °C)

12.4 Mobility in soil

Product:

Mobility : Medium: Soil
Remarks: Not expected to adsorb on soil., Partition coefficient (n-octanol/water) log Kow < 3., The product evaporates readily.

Components:

methane:

Mobility : Medium: Soil
Remarks: Not expected to adsorb on soil., Partition coefficient (n-octanol/water) log Kow < 3., The product evaporates readily.

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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12.7 Other adverse effects

Product:

Additional ecological information : This product has no known ecotoxicological effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Where possible recycling is preferred to disposal or incineration.

Contaminated packaging : In accordance with local and national regulations.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : NA 1954

IMDG : NA 1954

14.2 UN proper shipping name

ADR : COMPRESSED GAS, FLAMMABLE, N.O.S.
(hydrogen, methane)

IMDG : COMPRESSED GAS, FLAMMABLE, N.O.S.
(hydrogen, methane)

14.3 Transport hazard class(es)

ADR : 2

IMDG : 2.1

14.4 Packing group

ADR

Packing group : Not assigned by regulation

Classification Code : 1F

Hazard Identification Number : 23

Labels : 2.1

Tunnel restriction code : (B/D)

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IMDG

Packing group : Not assigned by regulation
Labels : 2.1
EmS Code : F-D, S-U

14.5 Environmental hazards

ADR

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : SDS: No specific instructions needed.

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Remarks : No data is available on the product itself.

SECTION 15: Regulatory information

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

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

| Category | | Quantity 1 | Quantity 2 |
|----------|-----------------|------------|------------|
| P2 | FLAMMABLE GASES | 10 t | 50 t |

| | | | |
|----|----------|-----|------|
| 15 | Hydrogen | 5 t | 50 t |
|----|----------|-----|------|

Other regulations:

No data available

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

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SECTION 16: Other information

Full text of other abbreviations

Further information

Issuer : Borealis, Group Product Stewardship / Mikaela Eriksson.

Sources of key data used to compile the Safety Data Sheet : International Chemical Safety Card, Methane, February 2000 (<http://www.inchem.org/documents/icsc/icsc/eics0291.htm>)
International Chemical Safety Card, Hydrogen, April 2014 (<http://www.inchem.org/documents/icsc/icsc/eics0001.htm>)
Chemical Safety Report, Other Petroleum Gases. Lower Olefins and Aromatics REACH Consortium, 2021

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.