


## Safety Datasheet LNG/LBG - Liquefied Natural gas/Liquefied Biogas


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<b>1. Identification of the substance/composition and the company</b>	
Date of issue	15 December 2012
Date revised	31 August 2017
1.1 Product identification	
Name of chemical	LNG – Liquefied Natural Gas LBG – Liquefied Biogas
REACH reg. no.	Exempt from registration according to Regulation (EC) No 1907/2006 (REACH), included in Annex IV / V REACH
CAS-no.	8006-14-2 (Natural gas)
1.2 Relevant identified uses of the substance or mixture and uses advised against	
The chemical's area of use	Heating / process heating / fuel
1.3 Details of the supplier of the safety data sheet	
Name of company	Gasum AS
Postal address	Kontinentalvegen 31
Post code	N-4056
City	Tananger
Country	Norway
Telefon	+47 52 97 92 00
Website	www.gasum.com
Contact person	Tine Hegre
1.4 Emergency telephone number	
Poison Information Centre	<b>Norway:</b> +47 22 59 13 00 <b>Sweden:</b> 010-456 6700 <b>Finland:</b> 09 471 977

<b>2. Hazards identification</b>	
<b>2.1 Classification of the substance or mixture</b>	
Classification pursuant to EC (CLP)	No 1272/2008
<ul style="list-style-type: none"> <li>Physical hazard</li> </ul>	Flammable gases – Category 1 - Hazard (H220) Pressurized gases – Refrigerated gases – Hazard (H280) (H281)
<ul style="list-style-type: none"> <li>Additional information</li> </ul>	For full text of Hazard- and EU Hazard-statements: see SECTION 2.2
<b>2.2 Label elements</b>	
Classification, Labelling and Packaging (CLP)	
Labelling according to EC (CLP)	No 1272/2008
	Code: <ul style="list-style-type: none"> <li>GHS 02</li> <li>GHS 04</li> </ul>
<ul style="list-style-type: none"> <li>Signal word</li> </ul>	Hazard
<ul style="list-style-type: none"> <li>Risk phrases</li> </ul>	H220 – EXTREMELY FLAMMABLE GAS H280 – Contains gas under pressure; may explode if heated H281 – Contains refrigerated gas; may cause cryogenic burns or injury
Safety phrases	
<ul style="list-style-type: none"> <li>Precautionary</li> </ul>	P210 – Keep away from heat/sparks/open flames/hot surfaces – no smoking P243 – Take precautionary measures against static discharge P282 – Wear cold insulating gloves /face shield/eye protection
<ul style="list-style-type: none"> <li>Measures</li> </ul>	P336+P315 – thaw frosted part with lukewarm water. Do not rub affected area. Get immediate medical advice/attention. P377 – Leaking gas fire: Do not extinguish, unless leak can be stopped safely P381 – Eliminate all ignition sources if safe to do so
<ul style="list-style-type: none"> <li>Storage</li> </ul>	P403 – Store in a well-ventilated place.
<ul style="list-style-type: none"> <li>Labelling</li> </ul>	(EC) No 1272/2008
<b>2.3 Other hazards</b>	
Description of hazard	
Health hazards:	Extremely flammable. In high concentrations the gas may cause slight dizziness and have an anaesthetic effect. In even higher concentrations, reduced consciousness and asphyxiation may result due to oxygen displacement. LNG/LBG may cause severe freezing injuries on skin or on eyes.
Safety hazards:	Natural gas is lighter than air and together with air forms a flammable/explosive mixture of air and gas.
Environmental hazards:	The product is not classified as harmful for the environment.

### 3. Composition/information on substances

#### 3.1 Compounds

Name of components	Identification	Classification	Content
Methane	CAS no.:74-82-8 EC.no.: 200-812-7 Index no.: 601-001-00-4	Flam. Gas 1; H220, H281 Press. Gas	> 85 %
Ethane	CAS-no.:74-84-0 EC.no.: 200-814-8 Index no.: 601-002-00-X	Flam. Gas 1; H220, H281 Press. Gas	< 10 %
Propane	CAS no.:74-98-6 EC.no.: 200-827-9 Index no.: 601-003-00-5 Synonyms: Propane	Flam. Gas 1; H220, H281 Press. Gas	< 2,5 %
Butane	CAS no.:106-97-8 EC.no.: 203-448-7 Index no.: 601-004-00-0 Synonyms: Butane	Flam. Gas 1; H220, Press. Gas	< 2,5 %
Comments on components	Remark: See item. 16 for full text of H-statements.		

### 4. First aid measures

#### 4.1 Description of first aid measures

General	Contact a physician in case of discomfort, irritation or other persistent symptoms
Inhalation	Remove the patient from the source of exposure. Fresh air or artificial resuscitation if needed/ supply oxygen. Contact a physician.
Skin contact	<ul style="list-style-type: none"> <li>• Call for an ambulance – the injured needs treatment at hospital</li> <li>• Severe cryogenic injuries must NOT be treated on site</li> <li>• Cryogenic injuries must be handled very carefully</li> <li>• Protect the frozen area against pressure and impact by covering / wrapping the injured area</li> <li>• Do not touch the body part that has the cryogenic injury</li> <li>• Make sure to keep the injured person still until help arrives</li> <li>• Do NOT massage the injured body part</li> </ul>
Eye contact	Rinse with ample water while lifting the eyelid. Continue rinsing for at least 15 minutes. Keep flushing until the patient gets medical attention. Contact a physician.

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

Information to health personnel	Symptomatic treatment. The gas may cause slight dizziness and have an anaesthetic effect in high concentrations. In even higher concentrations, reduced consciousness and asphyxiation may occur due to displacement of oxygen from the air. Narcotic effect in low concentrations. Symptoms may be dizziness, headache, indisposition and poor concentration. Cryogenic injuries may occur.
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<b>4.3 Indication of any immediate medical attention and special treatment needed</b>	
	Medical treatment according to symptoms. Give oxygen or mouth-to-mouth ventilation, if necessary.

## 5. Firefighting measures

### 5.1 Extinguishing media

Suitable fire extinguishing media:	Powder. Foam is less effective
Unsuitable extinguishing media:	DO NOT use water. CO2

### 5.2 Special hazards arising from the substance or mixture

Fire and explosion hazards	Extremely flammable. The gas is heavier than air at a temperature lower than minus 107°C. At temperatures higher than minus 107°C, the gas is lighter than air. If water is used on an LNG/LBG pool fire, the situation will escalate dramatically. Evaporation will increase 40-fold and the heat radiation will be extremely high.
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### 5.3 Advice for firefighters

Personal protective equipment	All remedial measures must be situational. Stop at a safe distance, min 100 m from the accident site. Check the situation – gas leak, non-ignited liquids, fire in gas phase/liquid phase. Wind direction: attack with the wind from behind. Do not use water on liquid leaks and/or fire. Extinguish the fire with powder if available. If possible, shut off escaping gas/liquid.  Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
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## 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Safety measures to protect personnel	Wear personal protective equipment as described in Section 8 of this safety data sheet. Remove all sources of ignition. Avoid sparks and open flame. Evacuate the area in case of potential explosive gas atmosphere. Shut off the gas if possible without risking own safety.
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### 6.2 Environmental precautions

Safety measures to protect the environment	Prevent spreading over wide areas. Shut off the gas if possible without risking own safety.
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<b>6.3 Methods and material for containment and cleaning up</b>	
Tidying and cleaning methods	The liquid phase will quickly evaporate and there will be no permanent pollution. Provide adequate ventilation.
<b>6.4 Reference to other sections</b>	
	For personal protection, see section 8.
<b>7. Handling and storage</b>	
<b>7.1 Precautions for safe storage</b>	
Handling	<ul style="list-style-type: none"> <li>• LNG/LBG equipment shall be operated by trained and skilled personnel</li> <li>• Work on LNG/LBG equipment shall only be carried out by trained and skilled personnel</li> <li>• Personal protective equipment shall be used</li> <li>• Smoking and use of open flame is prohibited</li> <li>• Non- Ex-classified equipment must not be used in classified areas</li> <li>• Mobile telephones must not be used near LNG/LBG equipment</li> <li>• LNG/LBG equipment must not be touched without safety gloves</li> <li>• Water and eye wash cups shall be accessible</li> <li>• Extinguishing equipment shall be easily accessible</li> </ul>
<b>7.2 Conditions for safe storage, including any inconsistencies</b>	
Storage	Only facilities built according to current standard, recommendations and authority approval must be used for storage.
<b>7.3 Specific end use(S)</b>	
<p>The identified uses for this product are detailed in Section 1.2.                  Odorization: Vaporising LNG/LBG to be used for heating, process heating etc. shall have an odorization agent added. This is to ensure that a gas leak is detected at the earliest possible stage.</p>	
<b>8. Exposure control/personal protection</b>	
<b>8.1 Control parameters Administrative standards</b>	
DNEL zero effect level (ppm)	Not available
PNEC zero effect concentration (ppm)	Not available
<b>8.2 Exposure controls</b>	
8.2.1: Appropriate engineering controls:	Gas detection must be in place wherever a gas atmosphere can be expected to occur. Make sure the room is sufficiently ventilated when handling the product.



8.2.2 Personal protection equipment:	
8.2.2.1 Respiratory protection:	If the ventilation is insufficient, use respiratory protection according to standard EN 136/140
8.2.2.2 Hand protection:	In case of hazard of skin contact, use cold resistant protective gloves
8.2.2.3 Skin protection (other than hand):	Use personal protective equipment when handling equipment that contains LNG/LBG
8.2.2.4 Eye and face protection:	Use eye protection/face shield if contact is likely. Eye protection according to standard EN 166.
<b>9. Physical and chemical properties</b>	
9.1 Information on basic physical and chemical properties	
Physical state	Liquefied gas
Colour	Colourless
Odour	Odourless
Boiling point	-162°C
Auto-ignition temperature	+580°C
Explosive limit	5 – 15 vol% in air
Relative density	450 kg/m <sup>3</sup>
Description of solubility	Low solubility in water
9.2 Other information – Other physical and chemical properties	
Other physical and chemical properties	N/A
<b>10. Stability and reactivity</b>	
10.1 Reactivity	
No reactivity hazard beyond those described in items 10.2 to 10.6.	
10.2 Chemical stability	
Stability	Stable during normal use and normal conditions.
10.3 Possibility of hazardous reactions	
N/A	
10.4 Conditions to avoid	
Extremely flammable	Keep away from heat/sparks/open flames/hot surfaces – no smoking.
10.5 Incompatible materials	
Materials to be avoided	<ul style="list-style-type: none"> <li>• Avoid contact with highly oxidising agents</li> <li>• Air</li> </ul>
10.6 Hazardous decomposition products	
	Carbon monoxide

<b>11. Toxicological information</b>	
<b>11.1 Information on toxicological effects</b>	
	No known effects
<b>11.2 Toxicological information</b>	
	No known effects
<b>11.3 Potential acute effects</b>	
Inhalation	No known effects
Skin contact	Liquid or cold gas may cause severe freezing injuries
Eye contact	Splash of liquid or cold gas may cause severe freezing injuries

<b>12. Ecological information</b>	
<b>12.1 Toxicity</b>	
Eco-toxicity	Adverse effects to the aquatic environment and the environment is not expected
<b>12.2 Persistency and degradability</b>	
Persistency and degradability	No data found
<b>12.3 Bioaccumulation potential</b>	
Bioaccumulation potential	No data found
<b>12.4 Mobility in soil</b>	
Mobility	No data found. The product is a liquid that quickly changes to gaseous form.
<b>12.5 Results of PBT and vPvB assessment</b>	
	Not classified as PBT or vPvB
<b>12.6 Other adverse effects</b>	
	Can cause frost damage to vegetation Global warming potential Methane = 25

<b>13. Disposal considerations</b>	
<b>13.1 Waste treatment methods</b>	
N/A	
<b>14. Transport information</b>	
<b>14.1 UN number</b>	
ADR	1972
RID	1972
IMDG	1972
ICAO/IATA	1972

<b>14.2 UN proper shipping name</b>	
ADR	Natural gas, refrigerated liquid with a high methane content
RID	Natural gas, refrigerated liquid with a high methane content
IMDG	Natural gas, refrigerated liquid
ICAO/IATA	Natural gas, refrigerated liquid
<b>14.3 Transport hazard class</b>	
ADR	2.1
Hazard no.	223
RID	2.1
IMDG/IATA	2.1
<b>14.4 Packing group</b>	
P203	
<b>14.5 Environmental hazards</b>	
N/A	None
<b>14.6 Special precautions for the user</b>	
EmS	F-D, S-U
<b>14.7 Transport in bulk pursuant to Appendix II to MARPOL 73/78 and IBC code</b>	
	No specific statements
<b>15. Regulatory information</b>	
<b>15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
References (Regulations/legislation)	<ul style="list-style-type: none"> <li>• Regulation on classification, labelling etc. of chemicals (CLP)</li> <li>• ADR/RID road and rail transport of dangerous goods</li> <li>• IMO dangerous goods, sea transport</li> <li>• ICAO dangerous goods, air transport</li> <li>• Regulations on hazardous waste</li> <li>• Seveso III directive: P2 flammable gases</li> </ul>
Declarations	53374
<b>15.2 Chemical safety assessment</b>	
	N/A
<b>16. Other information</b>	
The supplier's notes	This Safety Data Sheet shall be made accessible to those who handle the product.
Classification according to CLP(EC) NO 1272/2008(CLP/GHS)	Flam. gas 2; H220; on the basis of test data
List of relevant H phrases (in sections 2 and 3)	H220 Extremely flammable H280 Contains gas under pressure; may explode if heated H281 Contains refrigerated gas: may cause cryogenic burns or injury

Supplementary information	The Safety Data Sheet are designed in 16 points according to approved EU standard
Quality assurance of the information	This Safety Data Sheet is quality assured by Gasum AS, which is certified according to NS-EN 9001:2015 and NS-EN 14001:2015
Responsible for Safety Data Sheet	Gasum AS