

Safety Data Sheet for Liquefied Natural Gas (LNG)

Issued on 06.01.2017

Prepared in accordance with the requirements of Regulation 830/2015/EC of the European Parliament and of the Council.

Last modified on 30.01.2023, Version 3

1. Identification of the substance and of the company

1.1 Substance Name	Liquefied natural gas.
Other names in English	Methane, refrigerated natural gas. Natural gas, refrigerated natural gas. Liquefied natural gas (LNG).
1.2 Field of application	Used as a fuel in household, industrial and heating applications, and as motor fuel in internal combustion engines.
1.3 Company	OÜ Elenger Marine, reg. code 14793530. AS Eesti Gaas, reg. code 10178905.
Address	Sadama 7, Tallinn 10111, Estonia
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LNG department Contact phones	info@elengermarine.com + 372 5069127 + 372 53235441
Emergency number (Rescue Board)	112

2. Hazard identification

2.1 Classification of the substance or mixture



In accordance with Regulation 1272/2008/EC of the European Parliament on classification.

Physical and chemical risks	H220 – Flammable gases, hazard category 1 - extremely flammable gas. H280 – Gases under pressure. H281 – Contains frozen gas, may cause cryogenic burns or injury.
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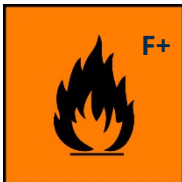
Classification according to Directive 1999/45/EC	F+, R12.
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2.2 Labeling elements

In accordance with Regulation 1272/2008/EC of the European Parliament on labeling requirements.

Hazard pictograms		
	GHS02 Flammable	GHS04 Gas under pressure: frozen liquefied gas
Signal word	CAUTION	
Hazard statements	H220 – Extremely flammable gas. H281 - Frozen liquefied gas, may cause cryogenic burns or injury.	
Prevention	P220 – Keep away from heat sources, sparks, open flames and hot surfaces. No smoking. P282 – Wear cold insulating gloves, face shield, eye protection.	
Response	P377 – Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 – Remove all sources of ignition if it can be done safely. P336+P315 – Thaw frosted parts with lukewarm water. Do not rub affected area. Seek immediate medical advice.	
Storing	P403 – Store in a well-ventilated place.	

Label elements according to Directive 67/548/EEC or Directive 1999/45/EC

	
Danger symbol(s)	F+ - extremely flammable.
R sentence	R12 – Extremely flammable.
S sentences	S9 – Keep container in a well-ventilated place. S16 – Keep away from sources of ignition. No smoking. S33 – Avoid generation of static electricity.
2.3 Other hazards	Contact with liquefied gas may cause cryogenic burns or injury, refrigerated natural gas.

3. Composition/information on ingredients

3.1 Description and composition of the chemical

Liquefied natural gas (LNG) is produced by cooling natural gas down to -162 °C and is a liquid with cryogenic properties, containing different hydrocarbons (C₁...C₁₀). LNG mainly contains methane (CH₄):

Name of the substance	EC №	CAS №	% (weight)	Classification (67/548)	Classification (1272/2008)
Liquefied natural gas	232-343-9	8006-14-2	≥99.0	F+; R12	Refrigerated liquefied gas - 1 (H281)
Natural gas and liquefied natural gas (LNG) are substances in different physical states but of the same composition. The basic ingredients of LNG are:					
Methane	200-812-7	74-82-8	90-98.0	F+; R12	Flammable gas - 1 (H220)
Ethane	200-814-8	74-84-0	≤10	F+; R12	Flammable gas - 1 (H220)
Propane and heavier hydrocarbons	200-827-9	74-98-6	≤4.0	F+; R12	Flammable gas - 1 (H220)

REACH registration number

Not subject to REACH registration.

4. First aid measures

4.1 Description of first aid measures

Inhalation	Move victim out of danger area, carry the breathing apparatus yourself. Keep the victim warm and in a rest position. Call a doctor. If breathing stops initiate artificial respiration.
In the event of skin contact	In case of ice burn, spray with water for at least 15 minutes. Place a sterile bandage on the wound. Call a doctor.
In the event of eye contact	Rinse immediately with plenty of water for at least 15 minutes.
In the event of ingestion	Very low probability
4.2 Most important symptoms	High levels can cause suffocation. Symptoms may include paralysis or loss of consciousness. The victim may not be aware of the suffocation.

5. Action in case of fire

5.1 Extinguishing media

Suitable extinguishing media	Dry powder, foam is less effective, CO ² .
Not suitable	Water jet. Use water spray or mist only to control combustion gases.
Hazardous combustion products	Incomplete combustion may produce carbon monoxide (CO).

5.2 Special hazards

- Risk of gas ignition.
- LNG is very cold. There may be a risk of rupture of protective clothing.
- Inhalation of cold air may cause damage to the lungs or other respiratory organs and airways.

- Moisture in the pressure relief device or in the protective mask breathing valve may cause malfunctions (equipment does not work properly).
- Decreased oxygen level - leakage reduces oxygen levels in the air in the immediate vicinity of the leak.

5.3 Advice for firefighters

Special methods

- Impose a danger zone with a radius of at least 100 m downwind. Evacuate all people from the danger zone. Stop traffic.
- If possible, stop the flow/leakage of the substance (LNG/natural gas).
- Direct firefighting to surrounding pockets of fire.
- Cool surrounding containers with water, keep a safe distance.
- The gas flame must not be extinguished before closing the gas flow, unless absolutely necessary. Otherwise, self-ignition or explosion may occur.
- Extinguish all other pockets of fire.

Special personal protective equipment for firefighters

Use full cold-protective clothing and self-contained breathing apparatus in confined areas.

Other instructions

- Do not extinguish a burning leak unless absolutely necessary. Extinguish other pockets of fire in the area.
- Contact a representative of the LNG department of Elenger Marine.

6. Accidental release measures

6.1 Personal precautions, protective equipment, and emergency procedures

- Consider the risk of an explosive atmosphere, try to stop the leak.
- When entering the area use self-contained breathing apparatus until it is confirmed that there is no danger.
- Evacuate the area.
- Ensure adequate ventilation.
- Remove sources of ignition.

6.2 Environmental emergency measures

Try to stop the leak.

6.3 Methods and material for containment and cleaning up

The liquid phase will quickly evaporate and there will be no permanent pollution. Ventilate the area.

7. Handling and storage


7.1 Precautions necessary to ensure safe handling and storage.

Safe handling

- Liquefied natural gas should only be handled by experienced and appropriately trained persons. The substance should be handled in accordance with good industrial hygiene and safety practice. Use only equipment suitable for the product, its pressure and temperature. If in doubt, contact your gas supplier.
- Ensure that gas appliances are properly grounded.
- Keep away from sources of ignition (including static discharges).
- Smoking is prohibited during handling of the product.

- 7.2 Safe storage**
- Comply with all legal and local requirements concerning the storage of containers. Keep containers in a well-ventilated area where the temperature is below 50 °C.
 - Store separately from oxidising gases and other oxidants.
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- 7.3 Special end use(s)**
- See in section 1.2.
 - Odorization agent must be added for household users to detect of gas leakage at the earliest possible stage (at least 20% of LEL).

8. Exposure controls/personal protection

8.1 Control parameters (maximum permissible concentration in the working environment)	Methane <ul style="list-style-type: none"> • 1000 ppm • 300 mg/m³
8.2 Appropriate technical inspection	<ul style="list-style-type: none"> • The pressurized systems must be subjected to periodic leakage checks. • In the event of the release of flammable gas or vapor, gas content detection devices (gas detectors) must be used. Ensure adequate general and local exhaust ventilation. Consider implementing a work permit system, e.g. in the case of maintenance work. • The substance is not classified as hazardous to human health or the environment and is not PBT (persistent, bioaccumulative and toxic substances) or vPvB (very persistent and very bioaccumulative substances), so no exposure or risk assessment is required. For tasks where worker intervention is required, the substance must be handled in accordance with good industrial hygiene and safety practice.
8.3 Personal protective equipment	 <ul style="list-style-type: none"> • Wear fireproofs antistatic and cold resistant protective clothing. • Wear safety goggles or face shield with side protection. • Wear cold resistant and protective gloves and footwear with antistatic soles.
8.4 Environmental exposure controls	Restrictions on emissions to the atmosphere can be found in local legislation.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical stage and colour	Liquefied refrigerated gas, colourless
Odour	Odourless
Physical state, 20 °C	Gas
Melting point	-182 °C
Boiling point	-162 °C
Flash point	-188 °C (methane)
Evaporation rate	Does not apply to gases and gas mixtures
Explosive range (vol % in air)	4.4% - 17%
Relative density, gas, 0 °C	0.54 - 0.74 (air = 1)

Density, liquid	410 - 450 kg/m ³
Water solubility, 20 °C	24 - 61 mg/l
Auto-ignition temperature	537 °C
Other information	Lighter than air when in gaseous state. May accumulate under covered surfaces.

10. Stability and reactivity

10.1 Chemical stability	<ul style="list-style-type: none">Stable under normal conditions.
10.2 Possibility of hazardous reactions	<ul style="list-style-type: none">May react violently with oxidants.May form explosive mixtures with air.
10.3 Conditions to avoid	<ul style="list-style-type: none">Avoid sparks, heat, open flames and other ignition sources.Smoking is prohibited.

11. Toxicological information

The product is not known to be toxic.

12. Ecological information

12.1 Toxicological effects	<ul style="list-style-type: none">Not toxic or dangerous for the environment.
12.2 Impact on global warming	<ul style="list-style-type: none">The release of large amounts can contribute to the aggravation of the greenhouse effect. Global warming potential 25 (CO₂ = 1).
12.3 Others	<ul style="list-style-type: none">May cause frost damage to vegetation.

13. Waste management

13.1 Methods	<ul style="list-style-type: none">Avoid release into the environment.Do not release at a place where there is a risk that an explosive mixture will form when exposed to air.The residual gas should be burned using a burner with a suitable non-return valve.It is forbidden to channel the gas to covered areas where accumulation may become dangerous.
13.2 Additional information	<ul style="list-style-type: none">For further instructions and appropriate disposal methods, see the EIGA guidance material (Doc. 30/10 "Disposal of Gases," which is available for download (www.eiga.org)).

14. Transport requirements

14.1 UN number	1972
14.2 Proper shipping name	Methane refrigerated liquid.
14.3 Transport marking ADR/RID, IMDG, IATA	



Hazard class	2
Classification code	3F
Hazard label	2.1
Hazard category	223
14.4 Tunnel restriction	B/D Tank transport: passage through Category B, C and D tunnels is prohibited.
14.5 Emergency measures code	2YE
14.6 Other Transport requirements	<ul style="list-style-type: none"> LNG can only be transported using an ADR-approved vehicle. The driver must have a valid ADR license. The carrier must have a "Security Plan" which describes specific instructions for ensuring the safe transport of liquefied natural gas.

15. Regulatory legislation

Safety, health and environmental regulations/legislation and directives/regulations applying to substances and mixtures in force in Estonia and the EU.

EU restrictions EU legislation	None.
Chemical safety assessment	The product does not require a CSA.

16. Other information

Indication of changes	This safety data sheet was revised on 30.01.2023. The most important changes are related to the company's contact details, the description and composition of the chemical, the actions in case of fire, and other transport requirements.
Other	This safety data sheet complies with all applicable European Union directives and is valid in countries that have adopted the relevant directives.
Disclaimer	Although the document has been prepared carefully, OÜ Elenger Marine and AS Eesti Gaas is not liable for any injuries or damage resulting from the use of the product. This safety data sheet supplements the technical operating instructions but does not replace them. The information contained herein is based on the authors' knowledge of the product in question on the date indicated. It is presented in good faith. In no case does this safety data sheet release users from knowing and applying all the laws and regulations governing their activities. Users are solely responsible for taking the precautions necessary to use the product. The examples of legislation provided here are intended to help users comply with the requirements applicable to them. The list should not be considered exhaustive. Users must verify, if they are subject to any other legal requirements other than those listed here. A thorough safety and suitability check must be performed before using this product in a new process or test.

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