

SAFETY DATA SHEET (SDS) FOR NATURAL GAS

(as cold, liquified natural gas (LNG) and/or as compressed natural gas (CNG))

1. Identification of product and company - nr of emergency :

Product name	: NATURAL GAS
Use	: Fuel, general/ industrial product
Colour	: Commercial substance is colourless
Odour	: Odourless unless odorised
Type	: Mixture
CAS-Nr	: 8006-14-2
Company ID	: SHV Energy
Emergency	: In case of emergency, please contact directly your natural gas transport system operator or distribution system operator European Emergency Number : 112

2. Identification of hazards :

This substance is classified according to guideline 1999/45/EC or guideline 67/548/EEC (environmentally hazardous materials) and the applicable amendments.

F+; R12 : Very highly flammable.

High concentrations in the air can result in a lack of oxygen which can lead to dizziness or to death. Compressed gas. Can cause suffocation in high concentrations, and in particular, in the event of accumulation in enclosed spaces can cause a dangerous situation. Avoid inhalation of the gas.

Can form explosive compounds. In combination with air in concentrations higher than the lowest flammable level there is an immediate risk of fire and explosion.

3. Composition and information about elementary components :

Chemical name:	weight %	hazard	CAS#	EG#
Natural gas	100	F+, R1	8006-14-2	232-343-9

Most significant components (> 1 %):

Methane	82-98	F+, R12	74-82-8	200- 812-7
Nitrogen	0.7-13.3		7727-37-9	231-783-9
Ethane	1-8.5	F+, R12	74-84-0	200-814-8
Propane	0.5-1.4	F+, R12	74-98-6	200-827-9

None of the components have a recognised REACH registration number at the moment of drafting this data. You will find the complete text of the stated R-phrases in section 16.

4. First Aid measures.

Contact with the eyes : Contact with the eyes can cause freezing. First rinse the eyes with water for some minutes (remove contact lenses where possible) then immediately consult a doctor (optometrist).

Contact with the skin : No hazardous effects caused by contact with the gas. Contact with fluid: freezing. In the event of freezing: rinse with water, do not remove clothing. Consult a doctor.

Ingestion : Ingestion is not considered likely.

Inhalation of aerosol or vapour in high concentration : Take the victim to a place with fresh air. Place the victim, when breathing but unconscious, in the recovery position. If breathing stops, initiate mouth to mouth. If the heart stops, massage the heart (qualified personnel). Check breathing and pulse. Consult a doctor immediately.

Supplementary medical treatment: Treat symptoms and supporting therapies according to regulation. Effects may appear later. Cool a burns victim with water.

5. Fire fighting measures.

Suitable fire fighting aids : Shut off the supply; if impossible and there is no hazard to the environment, let the fire burn out; in other circumstances, extinguish with powder or carbon dioxide, if not provided with water hose.

Extinguisher unsuitable from a safety point of view : Do not direct a jet or stream of water directly onto the liquid.

Unique fire hazards : The substance is highly flammable. The gas is lighter than air, leading to easily formed explosive mixture/cloud. Insufficient combustion can create carbon monoxide. In the event of fire: keep the container or vessel cool by spraying with water. Combat fire from a safe place

Safety of fire crew : Mouth and nose protection with an independent air supply is required in the event of a fire (compressed air in the event of an oxygen level below 18 %) as well as fully protective clothing. Implementation of trained personnel who are familiar with the risks of this product. Follow this with the supply of wash-down (showers, clothing, careful cleaning and checks).

Further information : Do not extinguish a gas flame unless absolutely necessary. Keep the vessel and the environment cool by spraying with water. Spontaneous, explosive reigniting can occur. Danger of explosion if heated under pressure. Do not approach potentially hot cylinders. If natural gas is distributed, an artificial odour is often added (generally tetrahydrothiophene or tertiary butyl mercaptane); this artificial odour may or may not be present however.

6. Accidental release measures :

Personal prevention measures : Oversee the actions of suitable personal protective aids, including independently functioning breathing apparatus. Use air pressure apparatus. Immediately evacuate the danger area when told to do so by emergency services. Danger of explosion. Vapour can form an explosive mixture/cloud with air. Consult an expert. Keep bystanders away from the danger area and upwind. Remove all possible sources of ignition from the surrounding area. If safe to do so, stop the release of burning gas.

Environmental preventative measures : Try to stop the flow. Warn local authorities.

Cleaning methods : Ventilate the polluted area thoroughly. Keep the area evacuated and free of sources of ignition until all leaked substances are gone or until the base is frost free (in case of fluid.).

7. Handling and storage :

Handling : The handling of chemicals demands the use of preventive measures. Do not inhale vapours or smog. Ensure sufficient air refreshment and/ or (source, ceiling and floor) ventilation during working. Prevent the build up of electrostatic charges (for example, by earthing). Close gas system, ventilate the area; use an electric provision and lighting which will not cause explosion. Use non-sparking handtools. No open fires, no sparks and no smoking. Penetration of moisture into container must be prevented, therefore always close the shutter. Never use force when opening a jammed shutter. Before use, check all connections for leakage. Inertise all equipment and leads free of air/oxygen before allowing gas to pass through. Prevent return-stream in container. Only ever use specified equipment that is suitable for this product, pressure and temperature.

Storage : Keep packaging properly closed in a cool, well ventilated place. Avoid temperatures of above 45 °C. Protect cylinder from direct sun light. Keep apart from oxidising gasses and other oxidising substances in storage. Secure this product in accordance with the applicable legal requirements.

Suitable packaging: Sample taking bottles, material conform to NACE MR 0175 (Inox 316 L, Teflon coated).

Packaging materials to be avoided : the remaining

Storage temperature : Recommended storage temperature < 30 °C.

Intended use : Fuel, a number of applications in specific suitable approved installation. Incomplete combustion can lead to the very toxic, deadly carbon monoxide (CO).

8. Personal exposure/ protection control :

Limit values for exposure : Working hygienic exposure levels in mg/m³ (daily average time : 8 hours).

<u>MAC (B)</u>	<u>NIOSH (US)</u>	<u>Other</u>	<u>Comment</u>
-	1,000 pp	-	ACGIH

Designation of element natural gas : Oxygen suppressant gas: Risk of fire and explosion can be greater than health risk. Ensure oxygen percentage of 18 % or higher.

Personal protection : Do not eat, drink or smoke when working. Wear suitable clothing (preferably cotton or heat tolerant fibres). Smoking must be forbidden in the space in which this material is used, stored or processed. In the event of confined spaces, check oxygen levels before entering the space. Ensure Health and Safety and First Aid materials for burns are located within the immediate area

Mouth and nose protection : Wear suitable equipment, independent of breathing environment, in the event of insufficient ventilation (compressed air equipment in the event of an oxygen level below 18 %) or if company policy requires this. Keep breathing apparatus to hand for the eventuality of an emergency situation. Users of breathing apparatus must be trained to do so. Ensure that fire risks are well known. Risk of suffocation must equally be made clear during training.

Skin and Body : Wear suitable protective clothing (overalls, preferably in thick cotton), gloves and protective eyewear and protective gear for the face. Wear anti-static safety shoes or boots in spaces where exposure is possible. Wear fireproof clothing in the event of a potential risk of fire.

Hands : Wear protective isolating gloves if there is the risk of skin contact of the product as a fluid.

Eyes : Wear safety glasses/ face mask if there is a risk of contact with the product as a fluid. Do not wear contact lenses if there is a risk of freezing.

9. Physical and chemical features :

<u>Physical state</u>	: Gas (possibly compressed). The data included in this section are based on atmospheric gas at 20 °C, further to this, natural gas is a natural product and the compound can vary.
<u>Colour</u>	: Colourless.
<u>Smell</u>	: No odour (when no artificial odour is added).
<u>Important Health, safety and environment related information</u>	
<u>pH</u>	: Not determined
<u>Boiling point</u>	: -162 °C.
<u>Melting point</u>	: -182 °C.
<u>Auto ignition point</u>	: 530 °C
<u>Flash point</u>	: -187 °C (flammable gas).
<u>Explosive Features</u>	: Can form an inflammable/explosive a vapour/air compound when using.
<u>Explosion limit</u>	: 4.4 % to 16.4 %.
<u>Minimum ignition energy</u>	: 0.25 mJ (at 20 °C). Not determined
<u>Vapour tension</u>	: Not determined
<u>Relative vapour density</u>	: 0.614 (air = 1, at 20 °C and 1 atmosphere).
<u>Solubility in water</u>	: Barely (if not at all) soluble (0.03 m ³ /m ³ to 0.08 m ³ /m ³).

10. Stability and reactivity :

Stability : The vapour mixes well with the air, explosive mixtures are easily formed. Can form an explosive compound in the air.

Circumstances to avoid : As a result of the minimal carrying ability of the fluid, electrostatic charges can be caused by flow, movement, etc. Avoid sources of ignition and high temperatures. In the event of fluid, the substance can cause quick freezing. In the event of cold gas this is heavier than air. Can react violently with oxidants leading to fire and explosion.

Substances to avoid : Causes fast corrosion of some metals with water.

Dangerous combustion products : Incomplete combustion can form carbon monoxide. Carbon dioxide is released through combustion.

11. Toxicological Information :

Acute toxicity.

Product information : natural gas

LC50 (inhalation rate 36h) : 80,000 ppm (atmosphere with 8 % natural gas).

LC50 (inhalation rate 15 minutes) : > 800,000 ppm (test on propane).

Effect on the eyes : Fast vaporisation in fluid makes freezing possible. No effects under atmospheric circumstances.

Effect on the skin : Fast vaporisation in fluid makes freezing possible. No effects under atmospheric circumstances.

Effect on (respiration) respiration organs: The release of this gas can cause suffocation through the reduction of the oxygen level of the air in enclosed spaces. Unconsciousness usually results from an oxygen level lower than 18 %. The symptoms of extreme exposure, which can be counteracted if the exposure is reduced, can be shortness of breath, drowsiness, headaches, confusion, reduced coordination, eyesight problems or nausea. Prolonged exposure can lead to hypoxia, bluish colouration to the skin, numbness, damage to the nervous system, heart sensitisation, reduced consciousness and death.

12. Environmental information :

Eco-toxicity : No details.

Mobility : The gas is lighter than air.

Persistency and break down : Product does not hydrolyse in water.

Potential bio-accumulation : No details

Other damaging effects : Release in large quantities could contribute to the greenhouse effect.

Global warming potential (GWP) 23 (for methane).

WGK : 0 (Water threat classification, self classification).

13. Instructions for disposal :

Waste : Do not release into the air. Do not release into sewer system, manholes or any place where accumulation could be possible. Do not release into areas where there is the risk of creating an explosive compound with the air. Burn off unused gas with a suitable burner with flame extinguisher.

Eural code for waste processing : Not applicable
Empty packaging : Make free of gas.

14. Information relating to transportation :

ADR classification for transportation UN number : 97
Name of transportation document : UN 1971 COMPRESSED NATURAL GAS, with high methane level, 2.1
ADR class : 2.1
Classification code : 1F
Hazard identification : 23



ADR label :

Other transportation information: Ensure that cylinders are properly secured. Only transport in vehicles in which the loading area is separate from the driver space. Ensure that the driver is aware of the potential dangers of the loading and knows what to do in the event of an accident or emergency. Check whether the cylinder tap is properly closed and not leaking. Check if the plug (if present) is properly in place. Check if the tap cover is properly in place. Ensure proper ventilation. Handle in accordance with the applicable legislation.

15. Legally required information :

EU legislation.



Hazard symbols :
Classification of labelling : F+very highly flammable
Warning phrases : R12 very highly flammable
Safety recommendations : S2 Store out of reach of children.*
 S9 Store in a well ventilated place
 S16 Store away from source of ignition - do not smoke
 S33 Take action against the creation of static electricity

* If for sale to the general public.

16. Other information :

List of relevant R-phrases from section 2 & 3: R12-Very highly flammable.

Information source: The data are based on the current understanding and experience. The safety information sheet describes products with a view to the safety requirements. These data are no guarantee for the product features. It is the obligation of the user to use this product with care and to act in consideration of the applicable laws and legislation.

Safety information sheet conforms to Regulation (EC) no. 1907/2006 of the European Parliament and the Council of 18 December 2006 relating to the registration and assessment of and the authorisation and limitations with regard to chemical substances (REACH).

Miscellaneous

At the time of drafting this safety information sheet, there are still no safety reports registered for the substances in this preparation within the framework of regulation (EC) no. 1907/2006.

The supplier makes the relevant REACH use of the exemption ruling in appendix V, this indicates:

EXEMPTION OF THE REGISTRATION DUTY IN ACCORDANCE TO ARTICLE 2, PART 7, UNDER b) POINT 7 for the following naturally occurring substances, if not chemically altered:
minerals, ore, mineral concentrates, natural gas, cement clinker, liquid petroleum gas, condensed natural gas, process gasses and components thereof, crude oil, coal, cokes.