

Natural Gas Safety Data Sheet (SDS)

Specification No: HSQ/SP/001

Rev: 0

Date: June 2022



1 IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND COMPANY NAME

1.1 Product Identifier

Trade name:	Natural gas, dried
Substance/preparation:	Natural gas
CAS No.:	68410-63-9
EC no.:	270-085-9

Exempt from the obligation to register in accordance with Annex V to Regulation (EC) No. 1907/2006 (REACH).

1.2 Relevant Identified Uses of the Substance or Mixture

Natural gas can be used as:

- Heating and cooking fuel for residential, commercial and industrial purposes;
- Motor fuel (for suitable vehicles).

1.3 Details of Supplier of the Safety Data Sheet

Manufacturer/supplier:	Gas Networks Ireland
Address:	PO Box 51 Gasworks Road Cork Ireland T12 RX96
Phone:	+353 (0)21 453 4000
Fax:	+353 (0)21 453 4001
Email:	networksinfo@gasnetworks.ie

1.4 Emergency Phone Number

1800 20 50 50 (Republic of Ireland)

0800 002 001 (Northern Ireland)

0800 111 999 (Scotland)

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2 HAZARDS IDENTIFICATION

2.1 Classification in Accordance with Regulation (EC) No 1272/2008 (GHS/CLP)

Hazard Class / Category	Hazard Warnings
Flammable Gases; Category 1	H220 – Extremely flammable gas
Pressurised Gas	H280 – Contains gas under pressure; may explode if heated

2.2 Labelling in Accordance with Regulation (EC) No 1272/2008 (GHS/CLP)

Icon	 
	GHS02 GHS04
Signal Word	Danger
Hazard Warnings	H220 H280 Extremely flammable gas Contains gas under pressure; may explode when heated
Safety Instructions	
Prevention	P102 P210 P243 P377 P381 Keep out of reach of children Keep away from heat/sparks/open flames/hot surfaces No smoking Take precautionary measures against static discharge Leaking gas fire: Do not extinguish before leak can be stopped safely Eliminate all ignition sources if safe to do so
Reaction	P410 Protect from sunlight

2.3 Other Hazards

Further dangers to persons and to the environment:

Gas under pressure may explode when heated

Forms ignitable mixtures with air, explosion hazard within the explosive limits

High levels of natural gas can reduce the amount of oxygen breathed from the air and may cause asphyxiation. This can result in mood changes, slurred speech, vision problems, memory loss, nausea, vomiting, facial flushing and headache. In severe cases, there may be changes in breathing and heart rate, balance problems, numbness, and unconsciousness. If exposure is large or continues for a longer period, it can kill.

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Dangers from pressures in case of intentional or unintentional release

- Noise-shockwave due to potential of explosion
- Frostbite may be caused by freezing during de-pressurisation
- Ignited gas may cause burns
- Risks to health cannot be excluded because of accompanying substances in the gas
- Greenhouse gas

NOTE: low level exposure to methane in the environment or from the correct use of natural gas appliances would not be expected to cause any adverse health effects

3 COMPOSITION / INFORMATION ABOUT INGREDIENTS

3.1 Chemical Characterisation

Mixture of hydrocarbons and inert gases, whose relative portions may vary within the subsequent rounded limits.

The data in vol% deviate only slightly from the data in mol% (mol% is the mole fraction in percent).

3.2 Hazardous Ingredients

CAS No.	EC No.	Chemical Name	% (v/v)	Classification
74-82-8	200-812-7	Methane	88-98	Flam. Gas. Category 1; H220 Press. gas; H280
74-84-0	200-814-8	Ethane	≤12% (molar)	Flam. Gas. Category 1; H220 Press. gas; H280
74-98-6	200-827-9	Propane	<3	Flam. Gas. Category 1; H220 Press. gas; H280
106-97-8	203-448-7	n-Butane	<1	Flam. Gas. Category 1; H220 Press. gas; H280
75-28-5	200-857-2	iso-Butane	<1	Flam. Gas. Category 1; H220 Press. gas; H280
124-38-9	204-696-9	Carbon Dioxide	≤2.5% (molar)	Press. gas; H280
7783-06-4	231-977-3	Hydrogen Sulphide	≤ 5mg/ m ³	Flam. Gas. Category 1; H220 Press. gas; H280 Acute Toxicity. Category 2; H330 Specific Target Organ Toxicity –

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				Category 3; H335 Acute hazards to the aquatic environment; Cat. 1; H400
7727-37-9	231-783-9	Nitrogen	≤5 mol %	Press. gas; H280

NOTE: The chemical components above have been taken from gas samples taken from the GNI network.

Natural gas does not contain other components or impurities which will influence the classification of the product.

A trace of proprietary odorant is added for safe identification.

4 FIRST AID MEASURES

4.1 General Notes:

Following inhalation:

In the event of minor inhalation, remove victim to well ventilated uncontaminated area. Seek medical assistance if deemed necessary.

In the event of the victim being overcome, remove victim to uncontaminated area wearing self-contained breathing apparatus. Restore or support breathing as needed. Keep victim warm and rested. Move to fresh air. Seek medical assistance. Apply artificial respiration if breathing stopped. Due to danger of explosion, use oxygen only outside the danger zone.

Following skin contact: Adverse effects not expected.

Following eye contact: Adverse effects not expected.

Following ingestion: Ingestion is not considered a potential route of exposure.

Self-protection of the first aider: In the event of victim being overcome, first aider should wear self-contained breathing apparatus and anti-static clothing if removing victim from contaminated area. Ignition sources should be avoided/ removed.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

In high concentrations may cause asphyxiation by displacement of oxygen. Symptoms of asphyxiation may include loss of mobility/ consciousness. Victim may not be aware of the onset of asphyxiation. This can also result in mood changes, slurred speech, vision problems, memory loss, nausea, vomiting, facial flushing and headache. In severe cases, there may be changes in breathing and heart rate, balance problems, numbness, and unconsciousness. If exposure is large or continues for a longer period, it can kill.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

None.

5 FIRE-FIGHTING MEASURES

Stop gas leakage / isolate gas supply by shutting off the meter control valve or emergency control valve.

5.1 Extinguishing Media

Suitable extinguishing media

Well suited

- Dry powder
- Use water spray or fog to control fire fumes

Less well/ conditionally suited

- Carbon dioxide
- Water with appropriate extinguishing technology
- Mobile carbon dioxide and water extinguishers are usually not suitable to extinguish gas fires

Unsuitable extinguishing media

- Foam
- Full water jet

5.2 Special Hazards Arising from the Substance or Mixture

In enclosed spaces or poorly ventilated, do not extinguish flames before the gas leakage is stopped, otherwise an ignitable mixture may form.

Incomplete combustion may produce carbon monoxide (danger of poisoning).

5.3 Advice for Fire-Fighters

Special protective equipment for fire-fighters

Self-contained breathing apparatus if necessary.

Flame-retardant, anti-static, heat-protective clothing.

5.4 Additional Information

- Ensure self-protection
- Keep away unauthorised staff

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- Cordon off the danger area
- Form a safety zone
- Eliminate ignition sources
- Cool environment with water
- Cool containers at risk with water, if necessary, with water spray jet
- Prevent re-ignition

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

In the event of gas leakage or you smell gas call Gas Networks Ireland's 24-hour gas emergency service, as follows:

1800 20 50 50 (Republic of Ireland)

0800 002 001 (Northern Ireland)

0800 111 999 (Scotland)

- Ensure gas appliances have not been left on and unlit
- Do not smoke or use naked flames.
- Do not unplug or switch anything electrical on or off.
- Do not activate any source of ignition such as electrical switches, vehicles, telephones, mobile phones, two-way radios or doorbells. Eliminate ignition sources such as open flame or sparks.
- Open windows and doors to let the gas disperse
- If your appliances are off but the smell persists, turn off the gas at the meter
- In the event of high concentrations of gas, wear self-contained breathing apparatus when entering the area unless atmosphere has been tested and declared safe. Evacuate people from the area.

6.2 Environmental Precautions

In the event of gas leakage, isolate the supply if possible and ventilate the area.

6.3 Methods and Material for Containment and Cleaning

Ventilate the area.

6.4 Reference to Other Sections

See also Sections 8 and 13.

7 HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Natural gas is normally transported by means of high-pressure transmission pipelines and low/medium pressure distribution pipe networks.

Natural gas is lighter than air and will migrate upwards through a structure.

Ensure adequate ventilation at all levels.

Natural gas systems and appliances and their operation and maintenance must comply with relevant Irish standards available from the National Standards Authority of Ireland.

All gas installations must be suitably bonded and earthed to avoid the possibility of ignition by static electrical release or by stray current leakages.

Keep away from ignition sources.

System must be purged with an inert gas such as oxygen-free nitrogen before natural gas is introduced.

Precautions must be taken to prevent the pressure in a gas system reducing to atmospheric pressure as this may cause air induction which could cause an explosion if ignited.

7.2 Conditions for Safe Storage Including any Incompatibilities

Natural gas is generally transported in pipes at a range of pressures ranging from 130 barg (offshore), 85 barg (onshore) down to <100 mbar.

Intentional gas release may be carried out by qualified staff only.

Natural gas is lighter than air.

7.3 Information on Storage Conditions

When handling and storing natural gas, explosion protection measures must be taken (e.g. monitoring of the absence of gas with a suitable device, ventilation, prevention of ignition sources, designation of hazardous areas). These must be defined during the risk assessment to be carried out first.

Explosion group: II A

Temperature class: T1

Fire class: C

7.4 Specific End-Use

Natural gas can be used as:

- Heating and cooking fuel for residential, commercial and industrial purposes.

- Motor fuel (for suitable vehicles).

8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control Parameters

8.1.1 Occupational Exposure Limit Values

Substance	EC No	CAS No.	Country	Occupational Exposure Limit Value (8-hour reference period)		Occupational Exposure Limit Value (15-minute reference period)		Notes
Methane	200-812-7	74-82-8	Ireland	-		-		Asphyxiant
Ethane	200-814-8	74-84-0	Ireland	-		-		Asphyxiant
Propane	200-827-9	74-98-6	Ireland	-		-		Asphyxiant
n-Butane	203-448-7	106-97-8	Ireland	-		1000 ppm		-
			UK	600ppm		750ppm		-
Isobutane	200-857-2	75-28-5	Ireland	-		1000 ppm		-
Nitrogen	231-783-9	7727-37-9	Ireland	-		-		Asphyxiant
Carbon Dioxide	204-696-9	124-38-9	Ireland	5000 ppm	9000 mg/ m ³	-	-	IOELV
Hydrogen Sulphide	231-977-3	7783-06-4	Ireland	5 ppm	7 mg/ m ³	10 ppm	14 mg/ m ³	IOELV

8.1.2 Information on Monitoring Procedures

Refer to “BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.”

8.2 Exposure Controls

A risk assessment should be conducted and documented in each work area to assess the risks. The following recommendations should be considered.

8.2.1 Appropriate Engineering and Organisational Controls

All gas installations must be designed, constructed, tested and operated in compliance with recognised standards and codes of practice.

Take precautionary measures against static discharges.

Use spark proof or ATEX rated equipment in potentially explosive areas.

Consider work permit system e.g. for maintenance activities.

Gas detectors should be used when quantities of flammable gases/ vapours may be released. Keep concentrations well below lower explosion limits.

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Systems under pressure should be regularly checked for leakages.

Provide adequate general or local ventilation.

Work areas suspected of gas leakage must be ventilated, gas tested and if doubt exists, risk assessment must be carried out to determine if wearing of self-contained breathing apparatus is required

For tasks where the worker intervention is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.

Ensure exposure is below occupational exposure limits (where relevant)

8.2.2 Personal Protective Equipment

Personal protective equipment should be based on the task being performed and the risks involved. Work around/ with natural gas must be performed by individuals competent to work with natural gas.

Appropriate eye and face protection, hearing protection and clothing should be used when potential for direct contact with high pressure gas release exists.

At high concentrations, self-contained breathing apparatus should be worn.

Eye and Face Protection

Item	Standard
Eye Protection	EN 166 Class F (for glasses)
	EN 166 Class B (for goggles, where required)
	EN 166 Class B (for full face visors, where required)

Skin Protection

Not required.

Hearing Protection

Item	Standard
Hearing Protection	EN 352

Thermal Hazards

Item	Standard
Clothing	Flame resistant/ Fire retardant to EN ISO 11612
	Antistatic to EN 1149

8.2.3 Environmental Exposure Controls

Refer to Section 13.

9 PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties depend on the composition of the natural gas. This may vary within a relatively wide range. Therefore, the table below specifies ranges of the physical and chemical properties. The pressure-dependent values relate to an absolute pressure of 1013.25 Pa.

9.1 Information on Basic Physical and Chemical Properties

Physical state:	Gaseous
Appearance/Colour:	Colourless gas
Odour:	Rotten egg odour due to trace amounts of odorant (mercaptan) added to enable leaks to be easily detected
Odour threshold:	1.7 to 2.2 Olfactory degrees on the Sales Scale
pH:	Not available
Melting point/ freezing point:	-183 °C (methane)
Initial boiling point and boiling range:	-161 °C
Flash point	-180 °C to -188 °C
Evaporation rate:	Not applicable
Flammability (solid, gas):	Extremely flammable
Upper/ lower flammability/ explosive limits:	5 to 15 (Vol % in air, @ 20 °C)
Vapour density:	0.554 (methane) – 0.75 (max)
Relative density (air = 1):	0.55 to 0.70 (at 15 °C and 101.3 kPa)
Solubility:	24.4 - 61.2 mg/ L @ 20-25 °C
Partition coefficient: n-octanol/ water:	1.09 xlogPow (methane)
Auto-ignition temperature:	when mixed with air 535 °C to 595 °C
Decomposition temperature:	Not available
Viscosity @ 0 °C / 101.3 kPa:	10.9 µPa (methane)
Explosive properties (acc. EU Legislation):	Formation of explosive gas/ air mixtures possible
Oxidising properties:	Not oxidising

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10 STABILITY AND REACTIVITY

10.1 Reactivity

Natural gas is extremely flammable

It may form an explosive mixture with air or oxygen. Hazardous polymerization does not occur.

10.2 Chemical Stability

Stable at normal temperatures and pressures.

10.3 Possibility of Hazardous Reactions

It is extremely flammable.

May form explosive mixture on contact with air.

May react violently with oxidants.

10.4 Conditions to Avoid

Keep away from heat/ sparks/ hot surfaces/ flames or other ignition sources.

No Smoking

10.5 Incompatible Materials

Materials to avoid

Halogens and oxidisers (strong oxidising agents)

10.6 Hazardous Decomposition Products

Hazardous decomposition products are not expected to form under normal conditions of storage and use.

Carbon Monoxide may be produced by incomplete combustion

11 TOXICOLOGICAL INFORMATION

Acute toxicity: No known toxicological effects from this product

Skin corrosion/ irritation: No known effects from this product

Serious eye damage/ irritation: No known effects from this product

Corrosivity: No known effects from this product

Skin Sensitisation: No known effects from this product.

Repeated dose toxicity: No known effects from this product

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Carcinogenicity: No known effects from this product

Mutagenicity: No known effects from this product

Toxicity for reproduction: No known effects from this product

Germ cell mutagenicity: No known effects from this product

12 ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Non-toxic.

12.2 Persistence and Degradability

The hydrocarbons considered do not take part in hydrolysis in water.

The hydrocarbons methane, ethane, propane and butane are eliminated primarily through indirect photolysis. Their degradation products are carbon dioxide and water.

12.3 Bio-accumulation Potential

There is no bioaccumulation known for methane, ethane, propane and butane.

12.4 Mobility

The calculation according to Mackay, level I, for distribution into the environmental compartments of air, biota, sediments, soil and water shows that of the hydrocarbon's methane, ethane, propane and butane, 100% are redistributed to the air.

12.5 Results of PBT and vPvB Assessment

Does not meet the criteria for PBT or vPvB in accordance with Annex XIII to Regulation (EC) No. 1907/2006 (REACH).

12.6 Other Adverse Effects

For methane (CH₄) the global warming potential (GWP¹) is 21 (to Kyoto Protocol) / 25 (to WG I AR4 IPCC).

13 DISPOSAL CONSIDERATIONS

Release of natural gas should be avoided where possible because of its greenhouse potential.

The possibility of recycling or combustion should be assessed on a case-by-case basis.

Small quantities of natural gas may be released safely to the outside.

¹ Mass-related global warming potential of methane for a period of 100 years. The GWP value of 21 means that 1 kg of CH₄ is 21 times as climate-forcing as 1 kg of CO₂; accordingly, the GWP value of 25 means that 1 kg of CH₄ is 25 times as climate-forcing as 1 kg of CO₂.

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Large quantities of natural gas may be flared in controlled manner where necessary.

Release of natural gas in confined spaces should be avoided.

14 TRANSPORT INFORMATION

Natural gas is transported in pipes.

Natural gas is procured, transmitted and distributed in Ireland in accordance with the provisions of The Gas Act of 1976, subsequent amending legislation and the gas transportation licences issued by the Commission for Regulation of Utilities.

Where natural gas is packed by the user and prepared for transportation or transported, the regulations relevant to the respective mode of transportation must be complied with.

14.1 Overland Transport (ADR/ RID/ GGVSE)

Description of goods:	Natural gas, compressed, with high methane content
Class:	2
Classification code:	1F
UN no.:	1971
Warning board / Hazard no.:	23
Hazard label:	2.1
Packing instruction:	P200
Environmental hazard:	None

14.2 Maritime Transport IMDG/ GGV Sea

Description of goods:	Natural gas, compressed
Class:	2.1
UN no.:	1971
Marine Pollutant:	No
Hazard label:	2.1
EmS:	F-D, S-U
Packing instruction:	P200
Environmental hazard:	None

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14.3 Transport by air, ICAO/ IATA

Description of goods:	Natural gas, compressed
Class:	2.1
UN no.:	1971
Hazard label:	2.1
Packaging directive	200 (permissible only in freighter planes)
Environmental hazard:	None

15 REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/ Legislation Specific for the Substance or Mixture

15.1.1 EU Regulations

In July 2009, the European Parliament and Council adopted a new Directive, Directive 2009/73/EC, which aims at introducing common rules for the transmission, distribution, supply and storage of natural gas. It concerns mainly natural gas, liquefied natural gas (LNG), biogas and gas from biomass.

EU Regulations

Regulation (EC) No. 1907/2006 – REACH

Regulation (EC) No. 1272/2008 – GHS/CLP

Regulation (EC) No. 453/2010

Directive 2006/121/EC

Regulation (EU) No. 1025/2012 – OJ No. L 316

Directive 89/391/EEC – Safety and Health at Work Framework Directive

Directive 98/24/EC – Chemical Agents at Work Directive

15.1.2 National Regulations

The Gas Act 1976, as amended;

The Electricity Regulation Act, 1999, as amended and associated Regulations;

The Chemicals Act 2008, as amended by the Chemicals (Amendment) Act 2010;

The Chemicals Act (CLP Regulation) Regulations 2011 (S.I. No. 1023 of 2011); and

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Code of Practice for the Chemical Agent Regulations, (Health and Safety Authority, 2020).

15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out for this mixture (natural gas) by the supplier.

16 OTHER INFORMATION

The information listed describes only the safety requirements of the product and are based on the current state of knowledge. It does not constitute a warranty of any specific properties of the product described. Details given in this document are believed to be correct at the time they were prepared. While proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.