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

1.1. Product identifier

Trade name : NATURAL GAS H

SDS Nr : 213001

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas / Calibration gas. Laboratory use. Contact supplier for more uses information.

1.3. Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE Deutschland GmbH
Hans-Günther-Sohl-Straße 5
D-40235 Düsseldorf GERMANY
Telefon: +49 (0)211 6699-0 - Fax: +49 (0)211 6699-222

E-Mail address (competent person) : Info.SDB@AirLiquide.de

1.4. Emergency telephone number

Emergency telephone number : +49 (0)2151 398668

- Availability : (24 / 7)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Hazard Class and Category Code(s), Regulation (EC) No 1272/2008 (CLP)

• Physical hazards : Flammable gases - Category 1 - Danger - (CLP : Flam. Gas 1) - H220
Gases under pressure - Compressed gas - Warning - (CLP : Press. Gas) - H280

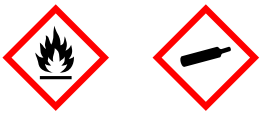
Classification EC 67/548 or EC 1999/45

Classification : F+; R12

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms



• Hazard pictograms code : GHS02 - GHS04

• Signal words : Danger

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

• Precautionary statements

- Prevention : P210 - Keep away from heat, sparks, open flames or hot surfaces. – No smoking.

- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.

- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

Other hazards : None.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Mixture.

Substance name		Content [Vol-%]	CAS No EC No Index No Registration no.	Classification(DSD)	Classification(CLP)
Propane	:	between 0.1 and 1 Vol.%	74-98-6 200-827-9 601-003-00-5 01-2119486944-21-	F+; R12	Flam. Gas 1 (H220) Liq. Gas (H280)
Butane n-	:	between 0.1 and 1 Vol.%	106-97-8 203-448-7 601-004-00-0 01-2119474691-32-	F+; R12	Flam. Gas 1 (H220) Liq. Gas (H280)
Carbon dioxide	:	< 1.5 Vol.%	124-38-9 204-696-9 ----- * 1	Not classified (DSD/DPD)	Liq. Gas (H280)
Nitrogen	:	between 0.5 and 3 Vol.%	7727-37-9 231-783-9 ----- *1	Not classified (DSD/DPD)	Press. Gas (H280)
Ethane	:	< 12 Vol.%	74-84-0 200-814-8 601-002-00-X * 2	F+; R12	Flam. Gas 1 (H220) Press. Gas (H280)
Methane	:	between 83 and 99 Vol.%	74-82-8 200-812-7 601-001-00-4 * 1	F+; R12	Flam. Gas 1 (H220) Press. Gas (H280)

Contains no other components or impurities which will influence the classification of the product.
* 1: Listed in Annex IV / V REACH, exempted from registration.
* 2: Registration deadline not expired.
* 3: Registration not required: Substance manufactured or imported < 1t/y
Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

- Skin contact : Adverse effects not expected from this product.

- Eye contact : Adverse effects not expected from this product.

- Ingestion : Ingestion is not considered a potential route of exposure.

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

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/ consciousness. Victim may not be aware of asphyxiation.
Refer to section 11.

SECTION 4. First aid measures (continued)

4.3. Indication of any immediate medical attention and special treatment needed

: None.

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

Extinguishing media : All known extinguishants can be used.

- Suitable extinguishing media : Water spray or fog.

- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : Incomplete combustion may form carbon monoxide.

5.3. Advice for firefighters

Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
If possible, stop flow of product.
Use fire control measures appropriate to the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
Use water spray or fog to knock down fire fumes if possible.

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Ensure adequate air ventilation.
Eliminate ignition sources.
Evacuate area.
Try to stop release.
Consider the risk of potentially explosive atmospheres.

6.2. Environmental precautions

: Try to stop release.

6.3. Methods and material for containment and cleaning up

: Ventilate area.

6.4. Reference to other sections

Reference to other sections : See also sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Purge air from system before introducing gas.
Do not smoke while handling product.
Only experienced and properly instructed persons should handle gases under pressure.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment.
Consider the use only non-sparking tools.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Consider pressure relief device(s) in gas installations.

Safe handling of the gas receptacle : Secure gas cylinder against overturning.
Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to repair or modify container valves or safety relief devices.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Damaged valves should be reported immediately to the supplier.

7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep container below 50°C in a well ventilated place.
Segregate from oxidant gases and other oxidants in store.
Store containers in location free from fire risk and away from sources of heat and ignition.
Stored containers should be periodically checked for general condition and leakage.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Containers should be stored in the vertical position and properly secured to prevent toppling.
Container valve guards or caps should be in place.
All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere.
Keep away from combustible materials.

7.3. Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Butane n-	: AGW (8h) - Germany [mg/m³] TRGS 900 : 2400
	: AGW (8h) - Germany [ppm] TRGS 900 : 1000
	: Exceeding factor AGW - Germany TRGS 900 : 4
Propane	: AGW (8h) - Germany [mg/m³] TRGS 900 : 1000
	: AGW (8h) - Germany [ppm] TRGS 900 : 1800
	: Exceeding factor AGW - Germany TRGS 900 : 4
Carbon dioxide	: ILV (EU) - 8 H - [mg/m³] : 9000
	: ILV (EU) - 8 H - [ppm] : 5000
	: AGW (8h) - Germany [mg/m³] TRGS 900 : 9100
	: AGW (8h) - Germany [ppm] TRGS 900 : 5000
	: Exceeding factor AGW - Germany TRGS 900 : 2
DNEL: Derived no effect level (Workers)	
	: No data available.
PNEC: Predicted no effect concentration	
	: No data available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls	: Provide adequate general and local exhaust ventilation. Systems under pressure shoud be regularily checked for leakages. Ensure exposure is below occupational exposure limits (where available). Keep concentrations well below lower explosion limits. Gas detectors should be used when flammable gases/vapours may be released. Consider work permit system e.g. for maintenance activities.
8.2.2. Individual protection measures, e.g. personal protective equipment	: A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. PPE compliant to the recommended EN / ISO standards should be selected.
• Eye / face protection	: Wear safety glasses with side shields Standard EN 166 - Personal eye-protection.
• Skin protection	
- Hand protection	: Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk.
- Other	: Consider the use of flame resistant anti-static safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Standard EN ISO 1149-5 - Protective clothing: Electrostatic properties. Wear safety shoes while handling containers. Standard EN ISO 20345 Personal protective equipment - Safety footwear.
• Respiratory protection	: Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmosphere. Standard EN 137 - self-contained open-circuit compressed air breathing apparatus with full face mask.
• Thermal hazards	: None necessary.
8.2.3. Environmental exposure controls	: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
Physical state at 20°C / 101.3kPa	: Gas.
Colour	: Colourless.
Odour	: Ethereal. Sweetish. There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
Odour threshold	: Odour threshold is subjective and inadequate to warn for overexposure.
pH value	: Not applicable for gas-mixtures.
Molar mass [g/mol]	: Not applicable for gases and gas-mixtures.
Melting point [°C]	: Not applicable for gas-mixtures.
Boiling point [°C]	: Not applicable for gas-mixtures.
Flash point [°C]	: Not applicable for gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gas-mixtures.
Flammability range [vol% in air]	: Flammability range not available.
Vapour pressure [20°C]	: Not applicable.
Relative density, gas (air=1)	: Lighter or similar to air.
Solubility in water [mg/l]	: • Methane : 26 • Ethane : 61 • Nitrogen : 20 • Propane : 75 • Butane n- : 88 • Carbon dioxide : Completely soluble. Solubility in water of component(s) of the mixture :
Partition coefficient n-octanol/water [log Pow]	: Not applicable for gas-mixtures.
Viscosity at 20°C [mPa.s]	: Not applicable.
Explosive Properties	: Not applicable.

9.2. Other information

Other data	: None.

SECTION 10. Stability and reactivity

10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: Can form explosive mixture with air. May react violently with oxidants.

10.4. Conditions to avoid

: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

: Air, Oxidiser.
For additional information on compatibility refer to ISO 11114

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: No known toxicological effects from this product.
Rat inhalation LC50 [ppm/4h]	: No data available.
Skin corrosion/irritation	: No known effects from this product.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information

12.1. Toxicity

	: Classification criteria are not met.
EC50 48h - Daphnia magna [mg/l]	: • Methane : 69.4 • Ethane : 46.6 • Propane : 27.1 • Butane n- : 14.2
EC50 72h - Algae [mg/l]	: • Methane : 19.4 • Ethane : 16.5 • Propane : 11.9 • Butane n- : 7.7
LC50-96h - fish [mg/l]	: • Methane : 147.5 • Ethane : 91.4 • Propane : 49.9 • Butane n- : 24.1

12.2. Persistence and degradability

: No data available.

12.3. Bioaccumulative potential

: No data available.

12.4. Mobility in soil

: No data available.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

Effect on ozone layer	: None.
Effect on the global warming	: Contains greenhouse gas(es) not covered by 842/2006/EC

SECTION 13. Disposal considerations

13.1. Waste treatment methods

: Do not discharge into areas where there is a risk of forming an explosive mixture with air.
Waste gas should be flared through a suitable burner with flash back arrestor.
Contact supplier if guidance is required.
Do not discharge into any place where its accumulation could be dangerous.
Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at http://www.eiga.org) for more guidance on suitable disposal methods
Ensure that the emission levels from local regulations or operating permits are not exceeded.

List of hazardous waste : 16 05 04 - gases in pressure containers (including halons) containing dangerous substances.

13.2. Additional information

: None.

SECTION 14. Transport information

UN number : 1954

Labelling ADR, IMDG, IATA

: 2.1 : flammable gas.

Land transport (ADR/RID)

H.I. nr	: 23
UN proper shipping name	: COMPRESSED GAS, FLAMMABLE, N.O.S. (Methane, Ethane)
Transport hazard class(es)	: 2
Classification code	: 1 F
Packing Instruction(s)	: P200
Tunnel Restriction	: B/D Tank carriage: Passage forbidden through tunnels of category B, C, D
Environmental hazards	: None.

Sea transport (IMDG)

Proper shipping name	: COMPRESSED GAS, FLAMMABLE, N.O.S. (Methane, Ethane)
Class	: 2.1
Emergency Schedule (EmS) - Fire	: F-D
Emergency Schedule (EmS) - Spillage	: S-U
Packing instruction	: P200
IMDG-Marine pollutant	: No

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA)	: COMPRESSED GAS, FLAMMABLE, N.O.S. (Methane, Ethane)
Class	: 2.1
Passenger and Cargo Aircraft	: DO NOT LOAD IN PASSENGER AIRCRAFT.
Cargo Aircraft only	: Allowed.
Packing instruction - Cargo Aircraft only	: 200

Special precautions for user

: - Ensure there is adequate ventilation.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers :

SECTION 14. Transport information (continued)

- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

Avoid transport on vehicles where the load space is not separated from the driver's compartment.

SECTION 15. Regulatory information

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

EU legislation

Seveso directive 96/82/EC : Covered

National legislation

: Ensure all national/local regulations are observed.

- 4. BImschV : Covered

- Water hazard class WGK (Germany) : Not hazardous to waters.

- Other regulations and technical rules (not complete) : [German regulations]
GefahrstoffV, BetriebssicherheitsV, BGRegel 500 Teil 2.33: Umgang mit Gasen, Technische Regel Gase TRG 280, Technische Regeln Gefährliche Stoffe TRGS 400, 500, 510, 900. BGR 104, TRBS 2152.

15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

SECTION 16. Other information

Indication of changes : Revised safety data sheet in accordance with commisssion regulation (EU) No 453/2010

Training advice : Ensure operators understand the flammability hazard.
Receptacle under pressure.

List of full text of R-phrases in section 3. : R12 : Extremely flammable.

List of full text of H-statements in section 3. : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.

Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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