

Fuel gas

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878 Reference number: D-C4H10-C3H8-001

Issue date: 4/11/2017 Revision date: 1/2/2023 Supersedes version of: 9/14/2020 Version: 0.4

Danger



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

1.1. Product identifier

Trade name : Fuel gas

SDS no : D-C4H10-C3H8-001

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

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.

Industrial and professional use for chemical analysis, calibration, (routine) quality control,

laboratory use, under controlled conditions. Perform risk assessment prior to use.

Uses advised against Consumer use.

Attention: These products must not be applied to humans or animals unless they are

expressly designated as medical or medicinal gases!.

Uses other than those listed above are not supported, contact your supplier for more

information on other uses.

1.3. Details of the supplier of the safety data sheet

Messer Industriegase GmbH GmbH

Messer-Platz 1

D - 65812 Bad Soden am Taunus

Germany

T 0049-(0)-6196 7760-200 - F 0049-(0)-6196 7760-280

SDB.de@messergroup.com - www.messer.de

1.4. Emergency telephone number

Emergency telephone number : Messer Produktionsgesellschaft Salzgitter GmbH +49 (0) 5341 21-9333, erreichbar

Montags 0:00 bis Sonntags 24:00

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards Flammable gases, Category 1A H220 H280

Gases under pressure: Liquefied gas

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)





GHS02

Signal word (CLP) : Danger

Hazard statements (CLP) H220 - Extremely flammable gas.

H280 - Contains gas under pressure; may explode if heated.

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Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

No smokina.

- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 - In case of leakage, eliminate all ignition sources.

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

2.3. Other hazards

None.

Asphyxiant in high concentrations.

Contact with liquid may cause cold burns/frostbite.

These high concentrations are within the flammability range.

Not classified as PBT or vPvB.

The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
propane	CAS-No.: 74-98-6 EC-No.: 200-827-9 EC Index-No.: 601-003-00-5 REACH-no: 01-2119486944-21	Rest	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
Isobutane	CAS-No.: 75-28-5 EC-No.: 200-857-2 EC Index-No.: 601-004-00-0 REACH-no: 01-2119485395-27	≤ 4	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
Butane n-	CAS-No.: 106-97-8 EC-No.: 203-448-7 EC Index-No.: 601-004-00-0 REACH-no: 01-2119474691-32	≤ 4	Flam. Gas 1A, H220 Press. Gas (Liq.), H280

Full text of H- and EUH-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.

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. Perform cardiopulmonary resuscitation if breathing

stopped.

- Skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes.

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain

medical assistance.

- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.

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

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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.

See section 11.

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

Provide oxygen.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.

Dry powder.

Shutting off the source of the gas is the preferred method of control.

- Unsuitable extinguishing media : Do not use a heavy water stream.

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 : Carbon monoxide.

5.3. Advice for firefighters

Specific methods : Use fire control measures appropriate for 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.

If possible, stop flow of product.

Use water spray or fog to knock down fire fumes if possible.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive

re-ignition may occur. Extinguish any other fire.

Move containers away from the fire area if this can be done without risk.

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

Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire

fighters.

Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves

for firefighters.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full

face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Act in accordance with local emergency plan.

Try to stop release. Evacuate area.

Eliminate ignition sources. Ensure adequate air ventilation.

Prevent from entering sewers, basements and workpits, or any place where its

accumulation can be dangerous.

Stay upwind.

See section 8 of the SDS for more information on personal protective equipment

For emergency responders : Monitor concentration of released product.

Consider the risk of potentially explosive atmospheres.

Wear self-contained breathing apparatus when entering area unless atmosphere is proved

to be safe.

See section 5.3 of the SDS for more information.

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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

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product

 Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.

Purge air from system before introducing gas.

Take precautionary measures against static discharge.

Keep away from ignition sources (including static discharges).

Consider the use of only non-sparking tools.

Ensure equipment is adequately earthed.

The product must be handled in accordance with good industrial hygiene and safety procedures.

Only experienced and properly instructed persons should handle gases under pressure.

Consider pressure relief device(s) in gas installations.

Ensure the complete gas system was (or is regularily) checked for leaks before use.

Do not smoke while handling product.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Avoid suck back of water, acid and alkalis.

Do not breathe gas.

Avoid release of product into work area.

Refer to supplier's container handling instructions.

Do not allow backfeed into the container.

Protect containers from physical damage; do not drag, roll, slide or drop.

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 valve discontinue use and contact supplier.

Never attempt to repair or modify container valves or safety relief devices.

Damaged valves should be reported immediately to the supplier.

Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container

is disconnected from equipment.

Close container valve after each use and when empty, even if still connected to equipment.

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.

Do not remove or deface labels provided by the supplier for the identification of the content of the container.

Suck back of water into the container must be prevented.

Open valve slowly to avoid pressure shock.

Safe handling of the gas receptacle

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7.2. Conditions for safe storage, including any incompatibilities

Segregate from oxidant gases and other oxidants in store.

All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

Observe all regulations and local requirements regarding storage of containers.

Containers should not be stored in conditions likely to encourage corrosion.

Container valve guards or caps should be in place.

Containers should be stored in the vertical position and properly secured to prevent them from falling over.

Stored containers should be periodically checked for general condition and leakage.

Keep container below 50°C in a well ventilated place.

Store containers in location free from fire risk and away from sources of heat and ignition.

Keep away from combustible materials.

7.3. Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

propane (74-98-6) Germany - Occupational Exposure Limits (TRGS 900)		
AGW (OEL TWA) [1]	1800 mg/m³	
AGW (OEL TWA) [2]	1000 ppm	
Peak exposure limitation factor	4(II)	
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)	
Regulatory reference	TRGS900	

Isobutane (75-28-5)		
Germany - Occupational Exposure Limits (TRGS 900)		
Local name	Isobutan	
AGW (OEL TWA) [1]	2400 mg/m³	
AGW (OEL TWA) [2]	1000 ppm	
Peak exposure limitation factor	4(II)	
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)	
Regulatory reference	TRGS900	

Butane n- (106-97-8)		
Germany - Occupational Exposure Limits (TRGS 900)		
Local name	Butan	
AGW (OEL TWA) [1]	2400 mg/m³	

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AGW (OEL TWA) [2]	1000 ppm
Peak exposure limitation factor	4(II)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)
Regulatory reference	TRGS900

DNEL (Derived-No Effect Level) : None established.

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.

Product to be handled in a closed system.

Systems under pressure should be regularily checked for leakages.

Ensure exposure is below occupational exposure limits (where available).

Gas detectors should be used when flammable gases/vapours may be released.

Consider the use of a 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. Wear goggles when transfilling or breaking transfer connections.

Standard EN 166 - Personal eye-protection - specifications.

Skin protection

· Eye/face protection

- Hand protection : Wear working gloves when handling gas containers.

Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.

Wear cold insulating gloves when transfilling or breaking transfer connections.

Standard EN 511 - Cold insulating gloves.

- Other : Consider the use of flame resistant anti-static safety clothing.

Standard EN ISO 14116 - Limited flame spread materials.

Standard EN 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 atmospheres.

Self contained breathing apparatus is recommended, where unknown exposure may be

expected, e.g. during maintenance activities on installation systems.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full

face mask.

Consult respiratory device supplier's product information for the selection of the appropriate

device.

When indicated by a risk assessment, Respiratory Protective Equipment must be used. The

selection of the Respiratory Protective Device (RPD) must be based on known or

anticipated exposure levels, the hazards of the product and the safe working limits of the

selected RPD.

• Thermal hazards : None in addition to the above sections.

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.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Ga

- Colour : Mixture contains one or more component(s) which have the following colour(s):

Colourless

Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of

overexposure.

Mixture contains one or more component(s) which have the following odour:

Stenchant often added. Sweetish.

Odour threshold is subjective and inadequate to warn of overexposure.

H : Not applicable for gases and gas mixtures.

Melting point / Freezing point : Not applicable for gas mixtures. Boiling point : Not applicable for gas mixtures.

Flash point : Not applicable for gases and gas mixtures.

Flammability : Extremely flammable gas.

Lower explosion limit : Not available Upper explosion limit : Not available Vapour pressure [20°C] : Not known. Vapour pressure [50°C] : Not available Density : Not applicable : Not applicable. Vapour density Relative density, liquid (water=1) Not applicable Relative density, gas (air=1) Heavier than air. Water solubility Not available

Partition coefficient n-octanol/water (Log Kow) : Not applicable for gas mixtures.

Auto-ignition temperature : Not known.

Decomposition temperature : Not applicable.

Viscosity, kinematic : No reliable data available.

Particle characteristics : Not applicable for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties : Not applicable.

Oxidising properties : Not applicable.

9.2.2. Other safety characteristics

Molar mass : Not applicable for gas mixtures.

Evaporation rate : Not applicable for gases and gas mixtures.

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below

ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

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

Data for mixtures are not available.

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.

Reactivity : This mixture contains components with the following reactivity : Can form explosive mixture

with air. May react violently with oxidants.

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10.4. Conditions to avoid

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

Avoid moisture in installation systems.

10.5. Incompatible materials

Air, Oxidisers.

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 hazard classes as defined in Regulation (EC) No 1272/2008

: Classification criteria are not met. **Acute toxicity**

propane (74-98-6)		
LC50 Inhalation - Rat [ppm]	20000 ppm/4h	
Isobutane (75-28-5)		
LC50 Inhalation - Rat [ppm]	3125 ppm/4h	

: No known effects from this product. 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. Germ cell mutagenicity : No known effects from this product. Carcinogenicity 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 : Not applicable for gases and gas mixtures.

11.2. Information on other hazards

Other information : The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Aspiration hazard

: Classification criteria are not met. Assessment

No data available. EC50 48h - Daphnia magna [mg/l] No data available. EC50 72h - Algae [mg/l] LC50 96 h - Fish [mg/l] No data available.

12.2. Persistence and degradability

Assessment : No ecological damage caused by this product.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : Partition into soil is unlikely.

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12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : No known effects from this product.

Effect on the ozone layer : No effect on the ozone layer.

Effect on global warming : Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.

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. Ensure that the emission levels from local regulations or operating permits are not

exceeded.

Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at

http://www.eiga.eu for more guidance on suitable disposal methods.

Do not discharge into any place where its accumulation could be dangerous.

Return unused product in original container to supplier.

List of hazardous waste codes (from Commission

Decision 2000/532/EC as amended)

16 05 04 *: Gases in pressure containers (including halons) containing hazardous

substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No. : 1965

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (propane, Isobutane)

Transport by air (ICAO-TI / IATA-DGR) : Hydrocarbon gas mixture, liquefied, n.o.s. (propane, Isobutane)

Transport by sea (IMDG) : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (propane, Isobutane)

14.3. Transport hazard class(es)

Labelling

2.1 : Flammable gases.

Transport by road/rail (ADR/RID)

Class : 2
Classification code : 2F
Hazard identification number : 23

Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other

carriage: Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 2.1

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Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.1
Emergency Schedule (EmS) - Fire : F-D
Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable
Transport by air (ICAO-TI / IATA-DGR) : Not applicable
Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) : P200

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft : Forbidden.
Cargo Aircraft only : 200.
Transport by sea (IMDG) : P200

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's

compartment.

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:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure 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.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : None.

Contains no substance(s) listed on the REACH Candidate List

Other information, restriction and prohibition

regulations

Gesetz zum Schutz der arbeitenden Jugend (Jugendarbeitsschutzgesetz-JArbSchG)

Betriebssicherheitsverordnung-BetrSichV

TRGS 407 - Tätigkeiten mit Gasen – Gefährdungsbeurteilung

TRBS 2141 - Gefährdungen durch Dampf und Druck - Allgemeine Anforderungen.

Sec 15 DE Flam.

Sec 15 DE BlmSchV 12.

Classification for storage according to TRGS 510: 2B Aerosolpackungen und Feuerzeuge.

TA Luft. None.

Seveso Directive: 2012/18/EU (Seveso III) : Covered

National regulations

Water hazard class (WGK) : nwg - Non-hazardous to water

Regulatory reference : Ensure all national/local regulations are observed.

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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 commission regulation (EU) No 2020/878.

Abbreviations and acronyms : ATE - Acute Toxicity Estimate

CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation

(EC) No 1907/2006

EINECS - European Inventory of Existing Commercial Chemical Substances

CAS# - Chemical Abstract Service number PPE - Personal Protection Equipment

LC50 - Lethal Concentration to 50 % of a test population

RMM - Risk Management Measures

PBT - Persistent, Bioaccumulative and Toxic vPvB - Very Persistent and Very Bioaccumulative

STOT- SE: Specific Target Organ Toxicity - Single Exposure

CSA - Chemical Safety Assessment

EN - European Standard UN - United Nations

ADR - European Agreement concerning the International Carriage of Dangerous Goods by

Road

IATA - International Air Transport Association

IMDG code - International Maritime Dangerous Goods

RID - Regulations concerning the International Carriage of Dangerous Goods by Rail

WGK - Water Hazard Class

STOT - RE: Specific Target Organ Toxicity - Repeated Exposure

UFI: Unique Formula Identifier

: Ensure operators understand the flammability hazard.

Classification in accordance with the procedures and calculation methods of Regulation

(EC) 1272/2008 (CLP).

Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169: 'Classification and Labelling

Guide', downloadable at : http://www.eiga.eu.

Full text of H- and EUH-statements		
Flam. Gas 1A	Flammable gases, Category 1A	
H220	Extremely flammable gas.	
H280	Contains gas under pressure; may explode if heated.	
Press. Gas (Liq.)	Gases under pressure : Liquefied gas	

DISCLAIMER OF LIABILITY

Training advice Further information

: 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.

End of document

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