

Safety Data Sheet

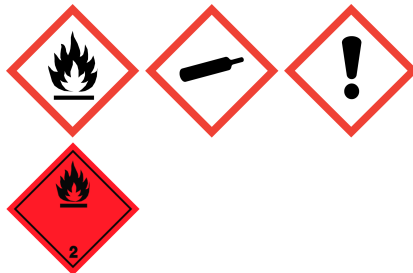
Propane

according to Regulation (EU) 2015/830

Reference number: SDS-104-CLP

Issue date: 11/10/2010 Revision date: 9/30/2022 Version: 5.0

Danger



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

1.1. Product identifier

Trade name : Propane
SDS no : SDS-104-CLP
Other means of identification : Propane
CAS-No. : 74-98-6
EC-No. : 200-827-9
EC Index-No. : 601-003-00-5
REACH registration No : 01-2119486944-21
Chemical formula : C₃H₈

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.
Test gas/Calibration gas.
Laboratory use.
Chemical reaction / Synthesis.
Use as a fuel.
Contact supplier for more information on uses.

1.3. Details of the supplier of the safety data sheet

Energas Ltd
Westmorland Street
Hull, HU2 0HX

1.4. Emergency telephone number

Emergency telephone number : 01675 462695 (Available 24/7)

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
	Gases under pressure : Liquefied gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 4	H332

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS02

GHS04

GHS07

Signal word (CLP) :

Danger

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Hazard statements (CLP)	: H220 - Extremely flammable gas. H280 - Contains gas under pressure; may explode if heated. H332 - Harmful if inhaled.
Precautionary statements (CLP)	
- Prevention	: P261 - Avoid breathing dust/fume/gas/mist/vapours/spray. P271 - Use only outdoors or in a well-ventilated area. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response	: P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - In case of leakage, eliminate all ignition sources. P312 - Call a POISON CENTRE or doctor if you feel unwell.
- Storage	: P403 - Store in a well-ventilated place. P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

Contact with liquid may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1. Substances

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 registration No: 01-2119486944-21	100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Acute Tox. 4 (Inhalation:gas), H332

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

Not applicable

3.2. Mixtures

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

In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

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

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
Dry powder.
- Unsuitable extinguishing media : Do not use water jet to extinguish.
Carbon dioxide.

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 : 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 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Try to stop release.
- Evacuate area.
- Consider the risk of potentially explosive atmospheres.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Eliminate ignition sources.
- Ensure adequate air ventilation.
- Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
- Act in accordance with local emergency plan.
- Stay upwind.

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

- : Do not breathe gas.
- Avoid release of product into atmosphere.
- 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 regularly) 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.
- 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.

Safe handling of the gas receptacle

- : 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.

7.2. Conditions for safe storage, including any incompatibilities

- 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.
- 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.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when flammable gases/vapours may be released.
The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

- Eye/face protection
 - : 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 safety glasses with side shields.
 - Wear goggles when transfilling or breaking transfer connections.
 - Standard EN 166 - Personal eye-protection - specifications.
- Skin protection
 - Hand protection
 - : Wear working gloves when handling gas containers.
 - Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.
 - 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
 - : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
 - Consult respiratory device supplier's product information for the selection of the appropriate device.
 - Recommended: Filter AX (brown).
 - Gas filters do not protect against oxygen deficiency.
 - Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
 - : None necessary.
- Thermal hazards

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 : Stenchant often added. Sweetish. Poor warning properties at low concentrations.
Odour threshold is subjective and inadequate to warn of overexposure.
- pH : Not applicable.
- Melting point / Freezing point : -188 °C
-188 °C
- Boiling point : -42.1 °C
- Flash point : Not applicable for gases and gas mixtures.

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Flammability	: Not available
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Vapour pressure [20°C]	: 8.3 bar(a)
Vapour pressure [50°C]	: 17 bar(a)
Density	: Not applicable
Vapour density	: Not available
Relative density, liquid (water=1)	: 0.58
Relative density, gas (air=1)	: 1.5
Water solubility	: 75 mg/l
Partition coefficient n-octanol/water (Log Kow)	: 2.36
Auto-ignition temperature	: 470 °C
Decomposition temperature	: Not available
Viscosity, kinematic	: Not applicable.
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	: Not applicable.
Explosion limits	: 1.7 – 10.8 vol %
Oxidising properties	: None.
Tci	: 3.7 %
Critical temperature [°C]	: 96.7 °C

9.2.2. Other safety characteristics

Molar mass	: 44 g/mol
Evaporation rate	: Not applicable for gases and gas mixtures.
Gas group	: Press. Gas (Liq.)
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.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

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

10.4. Conditions to avoid

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

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

Acute toxicity	: No known toxicological effects from this product.
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LC50 Inhalation - Rat [ppm]	20000 ppm/4h
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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	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

EC50 48h - Daphnia magna [mg/l]	: 27.1 mg/l
EC50 72h - Algae [mg/l]	: 11.9 mg/l
LC50 96 h - Fish [mg/l]	: 49.9 mg/l

12.2. Persistence and degradability

Assessment	: The substance is readily biodegradable. Unlikely to persist.
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12.3. Bioaccumulative potential

Assessment	: Not expected to bioaccumulate due to the low log Kow (log Kow < 4). See section 9.
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12.4. Mobility in soil

Assessment	: Because of its high volatility, the product is unlikely to cause ground or water pollution.
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12.5. Results of PBT and vPvB assessment

Assessment	: Not classified as PBT or vPvB.
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12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

Effect on the ozone layer	: None.
Effect on global warming	: No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended)	<p>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. Do not discharge into any place where its accumulation could be dangerous. 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.org for more guidance on suitable disposal methods.</p> <p>: 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.</p>
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13.2. Additional information

None.

SECTION 14: Transport information**14.1. UN number or ID number**

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

UN-No. : 1978

14.2. UN proper shipping name

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

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

Transport by sea (IMDG) : PROPANE

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

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



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- 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.
Other information, restriction and prohibition regulations : Ensure all national/local regulations are observed.
Seveso Directive : 2012/18/EU (Seveso III) : Listed.

National regulations

No additional information available

15.2. Chemical safety assessment

A CSA has been carried out.
Refer to section 8.2.

SECTION 16: Other information

- Indication of changes : Safety data sheet in accordance with commission regulation (EU) No 2020/878.
- Training advice : Ensure operators understand the flammability hazard.
The hazard of asphyxiation is often overlooked and must be stressed during operator training.
- Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

Full text of H- and EUH-statements	
Acute Tox. 4 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 4
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H332	Harmful if inhaled.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

- 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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