Safety Data Sheet

LIQUEFIED PETROLEUM GAS – COMMERCIAL PROPANE

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 10/18/2024 Version: 1.0

Danger

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

1.1. Product identifier

Trade name : LIQUEFIED PETROLEUM GAS – COMMERCIAL PROPANE

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

Relevant identified uses : Commercial Propane is a multi purpose product intended for domestic, commercial and industriial uses including: cooking, heating, as a fuel for equipment which has been specifically designed to run on commercial propane; for internal combustion engine fuel (Autogas); as a feedstock for the petrochemical industry.

1.3. Details of the Flogas Britain Ltd. of the safety data sheet

Flogas Britain Ltd.
Watermead Business Park, 81 Rayns Way
Syston
LE7 1PF, Leicestershire
T 44 (0) 116 264 9000
enquiries@flogas.co.uk, www.flogas.co.uk

1.4. Emergency telephone number

Emergency telephone number : +44 (0) 03457 200 100

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 1B	H221
	Gases under pressure : Compressed gas	H280
Health hazards	Germ cell mutagenicity, Category 1B	H340
	Carcinogenicity, Category 1A	H350

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS02 GHS08 GHS04

Signal word (CLP) : Danger

Hazard statements (CLP) : H221 - Flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H340 - May cause genetic defects.
H350 - May cause cancer.

Precautionary statements (CLP)

- Prevention : P201 - Obtain special instructions before use.
P280 - Wear protective gloves, protective clothing, eye protection.

- Response : P308+P313 - IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

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] ATE, EUH-statements, M-Factors
Petroleum gases, liquefied; Petroleum gas; [A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C7 and boiling in the range of approximately– 40°C to 80°C (– 40°F to 176°F).]	CAS-No.: 68476-85-7 EC-No.: 270-704-2 EC Index-No.: 649-202-00-6	≥ 80	Press. Gas Flam. Gas 1, H220 Carc. 1A, H350 Muta. 1B, H340
propane	CAS-No.: 74-98-6 EC-No.: 200-827-9 EC Index-No.: 601-003-00-5 REACH-no: 01-2119486944-21	≥ 80	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
butane	CAS-No.: 106-97-8 EC-No.: 203-448-7 EC Index-No.: 601-004-00-0 REACH-no: 01-2119474691-32	< 20	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
methanol	CAS-No.: 67-56-1 EC-No.: 200-659;200-659-6 EC Index-No.: 603-001-00-X	< 1	Flam. Liq. 2, H225 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Oral), H301 STOT SE 1, H370
1,3-butadiene	CAS-No.: 106-99-0 EC-No.: 203-450-8 EC Index-No.: 601-013-00-X REACH-no: 01-2119471988-16	< 0.1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Muta. 1B, H340 Carc. 1A, H350
ethyl mercaptan	CAS-No.: 75-08-1 EC-No.: 200-837-3 EC Index-No.: 016-022-00-9	< 0.1	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
methane	CAS-No.: 74-82-8 EC-No.: 200-812-7 EC Index-No.: 601-001-00-4 REACH-no: 01-2119474442-39	< 1	Flam. Gas 1A, H220 Press. Gas (Comp.), H280
ethane	CAS-No.: 74-84-0 EC-No.: 200-814-8 EC Index-No.: 601-002-00-X REACH-no: 01-2119486765-21	< 1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280

ethylene	CAS-No.: 74-85-1 EC-No.: 200-815-3 EC Index-No.: 601-010-00-3 REACH-no: 01-2119462827-27	< 1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 STOT SE 3, H336
2-methylpropene	CAS-No.: 115-11-7 EC-No.: 204-066-3 EC Index-No.: 601-012-00-4 REACH-no: 01-2119456616-32	< 1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
(E)-but-2-ene	CAS-No.: 624-64-6 EC-No.: 210-855-3 EC Index-No.: 601-012-00-4 REACH-no: *3	< 1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
Butadiene 1,2-	CAS-No.: 590-19-2 EC-No.: 209-674-2 EC Index-No.: --- REACH-no: 01-2119458051-48	< 0.1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
2,2-dimethylbutane	CAS-No.: 75-83-2 EC-No.: 200-906-8 EC Index-No.: 601-007-00-7	< 1	Flam. Liq. 2, H225 Asp. Tox. 1, H304 Skin Irrit. 2, H315 STOT SE 3, H336 Aquatic Chronic 2, H411
pentane	CAS-No.: 109-66-0 EC-No.: 203-692-4 EC Index-No.: 601-006-00-1	< 1	Flam. Liq. 2, H225 Asp. Tox. 1, H304 STOT SE 3, H336 Aquatic Chronic 2, H411 EUH066
1-Pentene	CAS-No.: 109-67-1 EC-No.: 203-694-5 EC Index-No.: ---	< 1	Flam. Liq. 1, H224

Comments : May contain several compounds consisting of two fused thiophene rings, having the molecular formula C6H4S2.)

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

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

**1: Listed in Annex IV / V REACH, exempted from registration.*

**3: Registration not required: Substance manufactured or imported < 1t/y.*

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 : Commercial Propane may cause cold burns or injury. Treat burnt or frostbitten skin by flushing or immersing the affected area(s) in lukewarm water. Do not rub affected area. Do not remove clothing that adheres due to freezing. After sensation has returned to the skin, keep skin warm, dry, and clean. If blistering occurs, apply a sterile dressing. Seek immediate medical attention.
- Eye contact : For contact with the liquefied product, seek immediate medical attention.
- Ingestion : Ingestion is not considered a potential route of exposure.

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

See section 11.
Commercial Propane is a simple asphyxiant and can cause anaesthetic effects at higher concentrations. Symptoms of exposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia, rapid breathing, cyanosis, numbness of the extremities, unconsciousness and death.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Shutting off the source of the gas is the preferred method of control.
  Dry powder.
  Carbon dioxide.
- 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.
Contents under pressure this material can be ignited by heat, sparks, flames, or other sources of ignition (e.g, static electricity, pilot lights, mechanical/electrical equipment, and electronic devices which are not intrinsically safe). Vapour may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Drains can be plugged and valves made inoperable by the formation of ice if rapid evaporation of large quantities of the liquefied gas occurs.

Hazardous combustion products : 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.
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.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
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.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment.
Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Any electrical equipment must be intrinsically safe or explosion proof. Beware of the potential for accumulation of gas in low areas, drains, basements, or contained areas, where explosive concentrations may occur. Ventilate area and allow to evaporate. Stay upwind and away from the spill / release. Avoid direct contact with material. For large spillages, evacuate persons downwind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out.

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.
Disperse vapours with sprayed water.

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.
Avoid exposure, obtain special instructions before use.
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 is 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 Flogas Britain Ltd. if in doubt.
Avoid suck back of water, acid and alkalis.
Do not breathe gas.
Avoid release of product into work area.

Safe handling of the gas receptacle : Refer to Flogas Britain Ltd.'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 Flogas Britain Ltd..
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to Flogas Britain Ltd..
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 Flogas Britain Ltd. 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.

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.
Store locked up.
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.
Empty containers retain pressurised residues. Do not pressurise, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

LIQUEFIED PETROLEUM GAS – COMMERCIAL PROPANE (68476-85-7)	
United Kingdom - Occupational Exposure Limits	
Local name	Liquefied petroleum gas
WEL TWA (OEL TWA)	1750 mg/m³
	1000 ppm
WEL STEL (OEL STEL)	2180 mg/m³
	1250 ppm

Remark	Carc (Capable of causing cancer and/or heritable genetic damage (only applies if LPG contains more than 0.1% of buta-1,3-diene))
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

1,3-butadiene (106-99-0)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	1,3-Butadiene
BOEL TWA	2.2 mg/m³
	1 ppm
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)
United Kingdom - Occupational Exposure Limits	
Local name	Buta-1,3-diene
WEL TWA (OEL TWA)	2.2 mg/m³
	1 ppm
Remark	Carc (Capable of causing cancer and/or heritable genetic damage)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

methanol (67-56-1)	
United Kingdom - Occupational Exposure Limits	
Local name	Methanol
WEL TWA (OEL TWA)	266 mg/m³
	200 ppm
WEL STEL (OEL STEL)	333 mg/m³
	250 ppm
Remark	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

ethyl mercaptan (75-08-1)	
United Kingdom - Occupational Exposure Limits	
Local name	Ethanethiol
WEL TWA (OEL TWA)	1.3 mg/m³
	0.5 ppm
WEL STEL (OEL STEL)	5.2 mg/m³
	2 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

pentane (109-66-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Pentane
IOEL TWA	3000 mg/m³
	1000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC
United Kingdom - Occupational Exposure Limits	
Local name	Pentane
WEL TWA (OEL TWA)	1800 mg/m³
	600 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

butane (106-97-8)	
United Kingdom - Occupational Exposure Limits	
Local name	Butane
WEL TWA (OEL TWA)	1450 mg/m³
	600 ppm
WEL STEL (OEL STEL)	1810 mg/m³
	750 ppm
Remark	Carc (Capable of causing cancer and/or heritable genetic damage, only applies if Butane contains more than 0.1% of buta-1,3-diene)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

1,3-butadiene (106-99-0)	
DNEL: Derived no effect level (Workers)	
Long-term - systemic effects, inhalation	2.21 mg/m³

2-methylpropene (115-11-7)	
DNEL: Derived no effect level (Workers)	
Long-term - local effects, inhalation	768.7 mg/m³
Long-term - systemic effects, inhalation	769 mg/m³

Butadiene 1,2- (590-19-2)	
DNEL: Derived no effect level (Workers)	
Long-term - systemic effects, inhalation	371 mg/m³

ethylene (74-85-1)
PNEC: Predicted no effect concentration

Aqua (freshwater)	1.67 mg/l
Aqua (marine water)	1.67 mg/l

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
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.
Product to be handled in a closed system and under strictly controlled conditions.
Preferably use permanent leak-tight installations (e.g. welded pipes).
Systems under pressure should be checked for leakages.
Ensure exposure is below occupational exposure limits (where available).

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 - specifications.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.

- 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 is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
Consult respiratory device and Flogas Britain Ltd.´s product information for the selection of the appropriate device.
Keep self contained breathing apparatus readily available for emergency use.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
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.

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 : Odour threshold is subjective and inadequate to warn of overexposure.
Mixture contains one or more component(s) which have the following odour:
Mildly aromatic. Stenchant often added. Sweetish.

Melting point / Freezing point : -24 °C

Boiling point	:	Not applicable for gas mixtures. It is technically not possible to determine the boiling point or range of this mixture. Component with lowest boiling point: methane -161.5 °C
Flammability	:	Flammable gas.
Lower explosion limit	:	9.5 vol % (in air) Calculated value: 1.52%
Upper explosion limit	:	2.2 vol % (in air) No test data or calculation method available.
Flash point	:	Not applicable for gases and gas mixtures.
Auto-ignition temperature	:	Auto ignition temperature for mixtures is not available. Component with lowest auto-ignition temperature: (E)-but-2-ene 324 °C
Decomposition temperature	:	Not applicable.
pH	:	Not applicable for gases and gas mixtures.
Viscosity, kinematic	:	Not applicable for gases and gas mixtures.
Water solubility [20°C]	:	Mixture is partially soluble in water
Partition coefficient n-octanol/water (Log Kow)	:	Not applicable for gas mixtures.
Vapour pressure [20°C]	:	7.5 bar at 15 °C
Vapour pressure [50°C]	:	Not applicable.
Density and/or relative density	:	Not applicable for gases and gas mixtures.
Relative vapour density (air=1)	:	1.56 (Heavier than air) & 0.51 (Water=1)
Particle characteristics	:	Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosion limits	:	Lower Explosion Limit is based on ISO10156 calculation.
Oxidising properties	:	No oxidising properties.

9.2.2. Other safety characteristics

Other data	:	None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Data for mixtures are not available.
This mixture contains components with the following reactivity : Can form explosive mixture with air. May react violently with oxidants. May decompose violently at high temperature and/or pressure or in the presence of a catalyst.

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.
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

Acute toxicity : Classification criteria are not met.

methanol (67-56-1)	

ethyl mercaptan (75-08-1)	
LC50 Inhalation - Rat [ppm]	8840 ppm/4h

Skin corrosion/irritation : Classification criteria are not met.
Serious eye damage/irritation : No known effects from this product.
Respiratory or skin sensitisation : No known effects from this product.
Germ cell mutagenicity : May cause genetic defects.
Carcinogenicity : May cause cancer.
Toxic for reproduction : Fertility : No known effects from this product.
Toxic for reproduction : unborn child : No known effects from this product.
STOT-single exposure : Classification criteria are not met.
STOT-repeated exposure : No known effects from this product.
Aspiration hazard : 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

Assessment : Classification criteria are not met.
EC50 48h - Daphnia magna [mg/l] : No data available.
EC50 72h - Algae [mg/l] : No data available.
LC50 96 h - Fish [mg/l] : No data available.

Petroleum gases, liquefied; Petroleum gas; [A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the range of C3 through C7 and boiling in the range of approximately– 40°C to 80°C (– 40°F to 176°F).] (68476-85-7)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

1,3-butadiene (106-99-0)	
EC50 48h - Daphnia magna [mg/l]	24 mg/l
EC50 72h - Algae [mg/l]	11 mg/l
LC50 96 h - Fish [mg/l]	43 mg/l

methanol (67-56-1)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

ethyl mercaptan (75-08-1)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

methane (74-82-8)	
EC50 48h - Daphnia magna [mg/l]	69.4 mg/l
EC50 72h - Algae [mg/l]	19.4 mg/l
LC50 96 h - Fish [mg/l]	147.5 mg/l

ethane (74-84-0)	
EC50 48h - Daphnia magna [mg/l]	7.02 - 69.43 mg/l
EC50 72h - Algae [mg/l]	7.71 - 16.5
LC50 96 h - Fish [mg/l]	24.11 - 147.54

ethylene (74-85-1)	
EC50 48h - Daphnia magna [mg/l]	62.4 mg/l
EC50 72h - Algae [mg/l]	30.3 mg/l
LC50 96 h - Fish [mg/l]	126 mg/l

2-methylpropene (115-11-7)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

propane (74-98-6)	
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

(E)-but-2-ene (624-64-6)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

Butadiene 1,2- (590-19-2)	
EC50 48h - Daphnia magna [mg/l]	7.3 mg/l
EC50 72h - Algae [mg/l]	11.3 mg/l

Butadiene 1,2- (590-19-2)	
LC50 96 h - Fish [mg/l]	42.5 mg/l

2,2-dimethylbutane (75-83-2)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

pentane (109-66-0)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

1-Pentene (109-67-1)	
EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

butane (106-97-8)	
EC50 48h - Daphnia magna [mg/l]	14.2 mg/l
EC50 72h - Algae [mg/l]	7.7 mg/l
LC50 96 h - Fish [mg/l]	24.1 mg/l

12.2. Persistence and degradability

Assessment : No data available.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment : 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 Flogas Britain Ltd. 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.
Must not be discharged to atmosphere.
Return unused product in original container to Flogas Britain Ltd..

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. : 1978

14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : 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/inland waterways (ADR/RID/ADN)
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/inland waterways (ADR/RID/ADN) : 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/inland waterways (ADR/RID/ADN)	:	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/inland waterways (ADR/RID/ADN)	:	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	:	Restricted to professional users (Annex XVII REACH). Contains no substance(s) listed on the REACH Candidate List.
Other information, restriction and prohibition regulations	:	Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals). Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants).
Seveso Directive : 2012/18/EU (Seveso III)	:	Covered.

National regulations

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

15.2. Chemical safety assessment

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

SECTION 16: Other information

Indication of changes	:	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 - 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.

Training advice : Ensure operators understand the flammability hazard.

Further information : 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.
Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Full text of H- and EUH-statements	
Acute Tox. 3 (Dermal)	Acute toxicity (dermal), Category 3
Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
EUH066	Repeated exposure may cause skin dryness or cracking.
Flam. Gas 1	Flammable gases, Category 1
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Gas 1B	Flammable gases, Category 1B
Flam. Liq. 1	Flammable liquids, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
H220	Extremely flammable gas.
H221	Flammable gas.
H224	Extremely flammable liquid and vapour.
H225	Highly flammable liquid and vapour.

H280	Contains gas under pressure; may explode if heated.
H301	Toxic if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H370	Causes damage to organs.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
Muta. 1B	Germ cell mutagenicity, Category 1B
Press. Gas	Gases under pressure
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 1	Specific target organ toxicity – single exposure, Category 1
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis

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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