



SAFETY DATA SHEET FOR LPG

1. Product and company identification

1.1 Product Identifier

Product name

LPG

Registry code (DK)

Propane 1892267

Butane 1892275

Synonyms

Kosangas, Kosan Autogas, Kosan Propane, Kosan Butane, Kosan Mix, Kosan BioMix,
Kosan Isobutane, bottled gas, F gas.

Index No.

Propane: 601-003-00-5

Butane/Isobutane: 601-004-00-0

LPG mix: 601-003-00-5/601-004-00-0

UFI: 48W0-YCP9-500D-H628

This product is exempted for registration under REACH re article 2(7)(b).

1.2 The product should only be used as described in section 1.2

Relevant identified uses: Fuel for domestic, commercial and industrial purposes and for combustion engines. Can also be used for aerosol propellant.

1.3 Details of the supplier of the safety data sheet

Kosan Gas a/s
Hasselager Centervej 19-21
DK-8260 Viby J

www.kosangas.dk

Telephone
+45 8948 7700

Email
post@kosangas.dk

1.4 Emergency telephone number

Kosan Gas emergency telephone
+45 8948 7700

Poison Information Centre (Bispebjerg Hospital)
+45 8212 1212

2. Hazard identification

2.1 Classification of the substance or mixture

Classification in accordance with regulation 1272/2008 (CLP): Flam. Gas 1 Press. Gas.

Hazard statements

H220 Extremely flammable gas

H280 Contains pressurised gas, may explode when heated

2.2 Label elements

CLP

Hazard symbols

Flammable

Gas under pressure

**Signal word**

Danger

Precautionary statements – general

P102 Keep out of reach of children.

Precautionary statements – preventive measures

P210 Keep away from heat/sparks/open fire/hot surfaces. No smoking.

P243 Take precautionary measures against static discharge.

Precautionary statements – response

P377 Fire from leaking gas: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

Precautionary statements – storage

P403 Store in a ventilated place.

Precautionary statements – disposal

P501 Dispose of contents/container in accordance with local waste regulations.

2.3 Other hazards

High concentrations of gas will displace oxygen in air. This may lead to sudden loss of consciousness and death due to oxygen deficiency. Exposure to liquid LPG may cause cold burns on eyes and/or skin. Vapour is heavier than air and may drift along the ground and reach distant ignition sources which may lead to back firing. Static electricity may accumulate during pumping. Static electricity may result in fire.

3. Composition and ingredient information**3.1 Substances**

LPG is treated under item 3.2.

3.2 Mixtures

Note: *Either ethyl mercaptan or Vigileak

Substances	Index no.	CAS/EC no.	CLP – 1272/2008	W/W %	SCL/M-factor/ATE
Propane* Kosan BioMix*	601-003-00-5	74-98-6 200-827-9	Flam. Gas 1 Press. Gas; H220, H280	>92.5	Not available
Butane*	601-004-00-0	106-97-8 203-448-7	Flam. Gas 1 Press. Gas; H220, H280	>92.5	Not available
LPG mix* (Propane/butane) Kosan BioMix	601-003-00-5 601-004-00-0	74-98-6 106-97-8	Flam. Gas 1 Press. Gas; H220	20-40 60-80	Not available
Isobutane	601-004-00-0	75-28-5 200-857-2	Flam. Gas 1 Press. Gas; H220	>95	Not available
1,3-Butadiene		203-450-8	Flam. Gas 1, Press Gas, Carc. 1A, Muta 1B, H220, H350, H340	<0,1	Not available
*Odorant/ Ethyl mercaptan	016-022-00-9	75-08-1	Flam. Liq. 2, Aquatic Chronic 1, Acute Tox 4 // H225, H332, H400, H410	>10 PPM	Not available
*Odorant/Vigileak 2-Methylpropane- 2-thiol/Dimethyl sulphide	200-800-2 200-846-2	75-66-1 75-18-3	Flam. Liq. 2:H225, Skin Sens. 1B;H317 Aquatic Chronic 2; H411 Eye Irrit.2; H319	>6 PPM	Not available
Methanol is sometimes added as an anti-freeze agent.	603-001-00-X	67-56-1 200-659-6	Flam. Liq. 2; Acute Tox. 3, H225, H301+H311+H331, H370, H371	< 1250 ppm	STOT SE 2, H371: 3% ≤C <10% STOT SE 1, H370: C≥10%,

4. First aid measures

4.1 Description of first aid measures

Inhalation

Move to fresh air. Keep the injured person under supervision.
Call the Poison Information Centre or a doctor immediately.

Skin Contact

Remove contaminated clothing, rings, watches etc., but not if they are adhering to the skin.
Wash/rinse with clean water. Seek medical attention if lasting discomfort.

Eye contact

Rinse with large amounts of water. If possible, remove any contact lenses. Protect the eyes with a sterile dressing. Seek immediate medical attention.

Ingestion

Not a likely exposure. Frostbite on lips and mouth must be rinsed with water.

Other information:

4.2 Most important symptoms and effects, both acute and delayed

Inhalation of gas may cause drowsiness, headache, blurred vision or irritation of the eyes, nose or throat. Continuous exposure can result in loss of consciousness and/or death.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic medical attention. Show this safety data sheet to the doctor or emergency department.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Shut off the gas supply.
Large fire – water sprinkling/mist for cooling.
Small fire – powder extinguisher type ABC.

Unsuitable extinguishing media

Foam.
Avoid direct water on gas pool which causes a quick evaporation of the gas and an increased fire risk.

5.2 Special hazards arising from the substance or mixture

Risk of explosion on pressure rise in closed containers.
Risk of explosion (BLEVE) if pressurised containers are exposed to heat from fire. Cool the container using water or move to a safe place, if possible. Gas is heavier than air and may drift along the ground, drainage systems or ditches. Complete combustion produces carbon dioxide and water vapour. Incomplete combustion produces carbon monoxide, which is toxic.

5.3 Advice for firefighters

If there is a risk of exposure to fumes and flue gases, fire fighters should wear all-covering, fire-resistant clothing and self-contained breathing apparatus. Static electricity may accumulate during pumping. Static electricity may result in fire.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Evacuate the area. Shut off the gas supply if this can be done without risk.
Remove ignition sources – choose a safe place in relation to the wind direction.

6.1.2 For emergency responders

Evacuate the area. Shut off the gas supply. Remove ignition sources. Avoid gas leakage in confined areas like basements and drainage systems.

6.2 Environmental precautions

Avoid unnecessary emission to the surroundings – does not cause pollution to soil or water.

6.3 Methods and material for containment and clean-up

Shut off the gas supply. Leave the liquefied gas to evaporate so that the gas is rarefied into a safe concentration in the atmosphere. Check and mix the gas with water spray where appropriate. Ventilate gas thoroughly from confined spaces.

6.4 Reference to other sections

Information about suitable equipment, see section 8.

7. Handling and storage

7.1 Precautions for safe handling

Smoking and open fires are prohibited. LPG is intended for use in closed systems. Ensure adequate ventilation. Avoid inhalation of gas. Wear suitable personal protective equipment.

7.2 Conditions for safe storage, including any incompatibilities

The product should be stored safely and out of reach of children. To be kept only in closed and approved pressure containers. Use explosion-proof equipment. Handling systems must be earthed and have equipotential bonding. The vapours are heavier than air and can therefore accumulate in low-lying areas, such as vehicle inspection pits, basements, channels and wells, and reach sources of ignition far away. Placement below ground level is therefore not permitted. Empty containers that have not been cleaned should be treated as full containers. Do not remove labelling. Handling and storage of large amounts of LPG requires authority approval. See the local/national regulations for gas.

7.3 Specific end use

See point 1.2

7.4 Other information

It is recommended that gas cylinders, especially composite cylinders, are not stored in direct sunlight whenever possible. The product should also be stored in suitable packaging designed to withstand temperature fluctuations. For cylinders, the standards EN1442 and EN 12542 are suitable.

8. Exposure controls/ personal protection

8.1 Control parameters

Substance	Limit value – ppm
Propane	1000
Butane	800
LPG mix/Butane/Propane	800/1000
Isobutane	1000

Limit values – comment

The values of the American Conference Governmental Industrial Hygienists have been specified above as a guide.

8.2 Exposure controls/personal protection

8.2.1 Appropriate exposure control measures

LPG is handled in a closed system. Explosion-proof exhaust ventilation. Gas detectors.

8.2.2 Individual protection measures such as personal protective equipment

Protection of eyes/face

For protection of skin or eyes in case of direct contact with or splashes of gas, a face shield or protection glasses in line with EN 166 must be worn.

Protection of skin/hands

If there is a risk of direct contact or splashes, gloves in line with EN 374 must be worn. The gloves must not become stiff at low temperatures and should be easy to remove.

Protection of skin/other

If there is a risk of direct contact or splashes, all-covering fire resistant clothing must be worn, to protect against frostbite and fire injuries.

8.2.3 Environmental exposure controls

None, since LPG is handled in closed systems.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

LEL = Lower Explosion Limit

Properties	Propane	Butane	LPG mix	Isobutane
Appearance	Colourless	Colourless	Colourless	Colourless
Odour	Odourless – distinct and unpleasant odour added	Odourless – distinct and unpleasant odour added	Odourless – distinct and unpleasant odour added	Odourless – distinct and unpleasant odour added
Odour threshold	Typically 20% of LEL	Typically 20% of LEL	Typically 20% of LEL	Not relevant
pH value	Not relevant	Not relevant	Not relevant	Not relevant
Melting/freezing point	Typically -187.6 to -138.3°C	Typically -187.6 to -138.3°C	Typically -187.6 to -138.3°C	Typically -187.6 to -138.3°C
Boiling Point	Typically -42°C	Typically -0.5°C	Typically -20°C	Typically -11°C
Flash Point	Typically -104°C	Typically < -50°C	Typically -104°C	Typically < -50°C
Evaporation Rate	Not relevant	Not relevant	Not relevant	Not relevant
Flammability	Inflammable	Inflammable	Inflammable	Inflammable
Upper-lower flammability or explosion limit	2.2-9.5 vol% gas in air	1.8-9 vol% gas in air	2.2-10 vol% gas in air	1.8-8.5 vol% gas in air
Vapour pressure at +40°C	Typically 13 bar (g)	Typically 3.2 bar (g)	Typically 9 bar (g)	Typically 4.8 bar (g)
Density, vapour kg/m³ at 0°C and 1013 mbar	Typically 2.0	Typically 2.7	Typically 2.3	Typically 2.7
Relative density (air = 1)	Typically 1.6	Typically 2.1	Typically 1.9	Typically 2.1
Density, liquid kg/m³ at 15°C	Typically 507	Typically 585	Typically 550	Typically 565
Solubility	Insignificant in water	Insignificant in water	Insignificant in water	Insignificant in water
Distribution coefficient (n-octanol-water)	Typically 1.815	Not determined	Typically 1.815	Not determined
Self-ignition temperature	Typically 450°C	Typically 420°C	Typically 450°C	Typically 494°C
Decomposition temperature	Not relevant	Not relevant	Not relevant	Not relevant
Gaseous viscosity	Not relevant	Not relevant	Not relevant	Not relevant
Explosive properties	Not relevant	Not relevant	Not relevant	Not relevant
Oxidising properties	Not relevant	Not relevant	Not relevant	Not relevant

9.2 Other information

Not relevant.

10. Stability and reactivity

10.1 Reactivity

Not reactive.

10.2 Chemical stability

Stable.

10.3 Possibility of hazardous reactions

Extremely flammable.

10.4 Conditions to avoid

Ignition sources – heat, flames, sparks.

10.5 Materials to avoid

Materials not approved for use with LPG.

Only use sealants and sealing materials documented to withstand LPG.

10.6 Hazardous decomposition products

Not relevant.

11. Toxicological information

11.1 Information on toxicological effects

Substance	Exposure	Species	Test	Result
Propane/Butane/Iso-butane	Inhalation	Mouse	LC50/2hr	1237 mg/L air

Inhalation

Non-irritating. Inhalation of concentrations above 10% may cause narcotic effects, headaches, nausea, visual disturbance and dizziness. Inhalation of high concentrations may affect the central nervous system and cardiac function. May cause loss of consciousness and death.

Skin

Non-irritating (vapour form). Frostbite from evaporation of liquefied gas.

Eyes

Non-irritating (vapour form). Frostbite from evaporation of liquefied gas.

Ingestion

Not relevant.

Repeated dose toxicity

Not known.

Carcinogenic

Not classified as a carcinogenic material (1,3-butadiene < 0.1%).

Mutagenic effects

Not considered mutagenic.

Reproductive toxicity

Not known.

11.2 Other information

LC50 (inhalation) low toxicity > 20 mg/l.

12. Ecological information 12.1 Toxicity

Substance	Test duration	Species	Test	Result
Propane/Butane/Iso-butane	96 h	Fish	LC50	27.98 mg/L
Propane/Butane/Iso-butane	48 h	Daphnia	LC50	14.22 mg/L
Propane/Butane/Iso-butane	96 h	Algae	EC50	7.71 mg/L

LPG evaporates quickly on contact with water. No acute or chronic impact in practice.

12.2 Persistence and degradability

Substance	Biodegradability in the aquatic environment	Test	Result
Propane/Butane/Iso-butane	Yes	Biodegradation test	100% after 385.5 h

Quick oxidation by photochemical reaction in air.

12.3 Bioaccumulative potential

Substance	Potentially bioaccumulative	LogPow	BCF
Propane/Butane/Iso-butane	No	1.09	-

Not expected to bioaccumulate.

12.4 Mobility in soil

Not relevant since LPG is extremely volatile.

12.5 Results of PBT and vPvB assessment

Hydrocarbons in the product do not meet the criteria for PBT or vPvB evaluation.

12.6 Endocrine disrupting properties

Not applicable

12.7 Other adverse effects

Global warming potential (GWP100) for non-combusted gas 3.3

13. Disposal considerations

13.1 Waste treatment methods

Chemical waste group	EWC code	Waste type
Z	16 05 04	Gases in pressure containers (including halons) containing substances

The properties and applications of the product result in no waste being generated.

Special labelling

Used or empty containers should be returned to Kosan Gas.

Returned containers must be labelled in accordance with ADR rules.

NB: Returned containers must be labelled with:



14. Transport information

	Road transport – ADR			
	Propane	Butane	LPG mix	Isobutane
UN number	1965	1965	1965	1969
UN shipping name	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture C)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A1)	Isobutane
Hazard class/label	2.1			
Hazard number	23			
Packing group	Not relevant			
Environment hazard	No			
Special precautionary measures for the user	Do not throw containers or expose to shock. During use the container must be placed in the correct position.			

	Railway transport – RID			
	Propane	Butane	LPG mix	Isobutane
UN number	1965	1965	1965	1969
UN shipping name	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture C)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A1)	Isobutane
Hazard class/label	2.1			
Hazard number	23			
Railway classification	Hazard label 13			
Packing group	Not relevant			
Environment hazard	No			
Special precautionary measures for the user	Do not throw containers or expose to shock. During use the container must be placed in the correct position.			

	Transport by ship – IMDG			
	Propane	Butane	LPG mix	Isobutane
UN number	1965	1965	1965	1969
Proper shipping name	Hydrocarbon gas, mixture, liquefied, n.o.s. (Mixture C)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A1)	Isobutane
Hazard class/label	2.1			
Packing group	Not relevant			
EMS	F-D, S-U			
Segregation group	None			
Sea polluting	No			
Special precautionary measures for the user	Do not throw containers or expose to shock. During use the container must be placed in the correct position.			
Bulk transport	Not relevant			

	Air transport – IATA			
	Propane	Butane	LPG mix	Isobutane
UN number	1965	1965	1965	1969
UN shipping name	Hydrocarbon gas, mixture, liquefied, n.o.s. (Mixture C)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A)	Hydrocarbon gas mixture, liquefied n.o.s. (Mixture A1)	Isobutane
Hazard class/label	2.1			
Packing group	Not relevant			
Sea polluting	No			
Special precautionary measures for the user	Do not throw containers or expose to shock. During use the container must be placed in the correct position.			
Bulk transport	Not relevant			

15. Regulatory information

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

Must not be used by people under 18 years of age (see local laws and regulations).

15.2 Chemical safety assessment

No chemical safety assessment has been made.

16. Other information

Explanation of hazard statements

H220	Extremely flammable gas
H225	Highly flammable liquid and vapour
H280	Contains pressurised gas, may explode when heated
H301	Toxic if swallowed
H311	Toxic if in contact with skin
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H332	Harmful if inhaled
H340	May cause genetic defects
H350	May cause cancer
H370	Causes damage to organs
H372	Causes damage to organs through prolonged or repeated exposure
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

This information is based on our existing knowledge and is intended to describe LPG in relation to health, safety, security and environmental requirements.