



SAFETY DATA SHEET

KOSAN LPG

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

1.1 Product identifier

Product name

Petroleum gas

Product code

Propane 1892267

Butane/isobutane/LPG-mix: 04001

Synonyms

Kosangas, Kosan autogas, Kosan propane, Kosan butane, Kosan LPG mix, Kosan isobutane, LPG.

Index No.

Propane: 601-003-00-5

Butane/isobutane: 601-004-00-0

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

This product is exempted for registration under REACH re article 2[7][b].

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

Relevant identified uses

Fuel for domestic, commercial and industrial purpose and for combustion engines.

Can also be used for aerosol propellant.

1.3 Details of the supplier of the safety data sheet

Supplier

Kosan Gas a/s
Hasselager Centervej 15
8260 Viby J

E-mail

post@kosangas.dk

Home page

www.kosangas.dk

Phone

+45 8948 7700

Fax

+45 8948 7711

1.4 Emergency telephone number

+45 8948 7700

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification in accordance with regulation 1272/2008 [CLP]: Flam. Gas 1 Press. Gas.

Risk phrases

H220 Extremely flammable gas.

H280 Contains pressurized gas, may explode when heated.

Classification in accordance with regulation 67/548/EEC and 1999/45/EC: Extremely flammable.

2.2 Label elements

GHS pictogram

Hazard symbols

Extremely flammable

Pressurized gas



Safety phrases - Preventive measures

P102 Keep out of the reach of children.

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

Safety phrases - Reaction

P377 Fire from leaking gas: Do not extinguish the fire unless it is safe to stop the leak.

P381 Remove all ignition sources if it is safe to do so.

Safety phrases - Storage

P410+P403 To be protected against sunshine. To be kept in a well ventilated place.

Classification in accordance with 67/548/EEC and 1999/45/EC.

F+



Extremely flammable

Risk phrases

R12 Extremely flammable.

Safety phrases

S9 Pressurized containers must be kept in a well ventilated place.

S16 Keep away from ignition sources - no smoking.

S33 Take measures against static electricity.

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 gas 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 occur during pumping. Static electricity may result in a fire.

3. COMPOSITION/INFORMATION ON INGREDIENTS**3.1 Substances: LPG is treated under item 3.2****3.2 Mixtures****Codes**

Fx = extremely flammable, F = highly flammable, Xn = irritating

Explanation of relevant risk phrases see item 16.

PROPANE

Materials	Identification		Classification in accordance with regulation		Weight-%
	EC No.	CAS No.	67/548/EC, 1999/45/EC	1272/2008(CLP)	
Propane	200-827-9	74-98-6	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	>90
Butane	203-448-7	106-97-8	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	<10
1,3-butadiene	203-450-8	106-99-0	Fx, R12, R45, R46	Flam. Gas 1 Press. Gas Carc. 1A Muta. 1B H220 H350 H340	<0.1
Ethylmercaptan	200-837-3	75-08-1	F, Xn, N R11, R20, R50, R53	Flam. Liq. 2 Acute Tox. 4 * Aquatic Acute 1 Aquatic Chronic 1 H225 H332 H400 H410	<0.01

BUTANE

Materials	Identification		Classification in accordance with regulation		Weight-%
	EC No.	CAS No.	67/548/EC, 1999/45/EC	1272/2008(CLP)	
Butane	203-448-7	106-97-8	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	>90
Propane	200-827-9	74-98-6	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	<10
1,3-butadiene	203-450-8	106-99-0	Fx, R12, R45, R46	Flam. Gas 1 Press. Gas Carc. 1A Muta. 1B H220 H350 H340	<0.1
Ethylmercaptan	200-837-3	75-08-1	F, Xn, N R11, R20, R50, R53	Flam. Liq. 2 Acute Tox. 4 * Aquatic Acute 1 Aquatic Chronic 1 H225 H332 H400 H410	<0.01

LPG-MIX

Materials	Identification		Classification in accordance with regulation		Weight-%
	EC No.	CAS No.	67/548/EC, 1999/45/EC	1272/2008(CLP)	
Propane	200-827-9	74-98-6	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	20-40
Butan	203-448-7	106-97-8	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	60-80
1,3-butadiene	203-450-8	106-99-0	Fx, R12, R45, R46	Flam. Gas 1 Press. Gas Carc. 1A Muta. 1B H220 H350 H340	<0.1
Ethylmercaptan	200-837-3	75-08-1	F, Xn, N R11, R20, R50, R53	Flam. Liq. 2 Acute Tox. 4 * Aquatic Acute 1 Aquatic Chronic 1 H225 H332 H400 H410	<0.01

ISO-BUTANE

Materials	Identification		Classification in accordance with regulation		Weight-%
	EC No.	CAS No.	67/548/EC, 1999/45/EC	1272/2008(CLP)	
ISO-butane	200-857-2	75-28-5	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	>95
n-butane	203-448-7	106-97-8	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	<4
Propane	200-827-9	74-98-6	Fx, R12	Flam. Gas 1 Press. Gas H220 H280	<2
1,3-butadiene	203-450-8	106-99-0	Fx, R12, R45, R46	Flam. Gas 1 Press. Gas Carc. 1A Muta. 1B H220 H350 H340	<0.1

4. FIRST AID MEASURES**4.1 Description of first aid measures****Inhalation**

Move patient into fresh air. Keep patient warm and at rest. If the patient is confused it may be necessary with some physical force to prevent injury. Unconscious casualties must be placed in the recovery position to ensure breathing is possible. If no breathing, administer artificial respiration. By cardiac arrest administer external cardiac massage. Monitor breathing and pulse rate. Seek medical attention immediately.

Skin contact

Drench the area with water. Remove contaminated clothing, rings, watches etc. if possible – but NOT if they are glued to the skin. Do not attempt to heat up the exposed body parts quickly – do it slowly. If possible cover with sterile dressing. Do not use ointment or powder. Please note that contaminated clothing is flammable.

Eye contact

Rinse with large amounts of water. If possible protect the eyes with sterile dressing. Seek immediate medical attention.

Ingestion

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

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. Contact with the skin may cause frostbite.

4.3 Indication of any immediate medical attention and special treatment needed

Symptomatic medical attention.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable

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

Unsuitable

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 by increased pressure in closed containers.
Pressurized containers are liable to explode when subjected to heat impact from fire - use water spray to cool the containers or move to a safe place, if possible.
Gas is heavier than air and may drift along the ground, drainage systems or ditches.
Combustion products - carbon dioxide (carbon monoxide by air shortage) and water.

5.3 Advice for firefighters

Fire fighters should wear all-covering, fire-resistant clothing and breathing apparatus.

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 a 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

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 liquified gas to evaporate so that the gas is rarefied into a safe concentration in the atmosphere. Check and possibly mix the gas with water spray. Ventilate gas from confined spaces.

6.4 Reference to other sections

Information about suitable equipment see item 8.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

LPG is intended for use in closed systems. Should be used only with adequate ventilation. Avoid inhalation of gas. Wear suitable personal protective equipment.

7.2 Conditions for safe storage, including any incompatibilities

To be kept only in closed and approved pressure containers. Handling of large amounts of LPG requires authority approval. Use explosion-proof equipment. Handling systems must be earthed and with equipotential bonding. Empty containers that have not been cleaned should be treated as full containers. Do not remove labelling.

7.3 Specific end use

Not relevant.

Other information

Certain rubber qualities will be decomposed by the gas. Contact the supplier of gaskets regarding the choice of rubber quality.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control parameters

Material	Limit value - ppm
Propane	1000
Butane	800
LPG mix butane/ propane	800/1000
ISO-butane	1000

Limit value - comments

The values of American Conference Governmental Industrial Hygienists have been stated above as a guidance.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

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 wear face shield or protection glasses of EN 166.

Protection of skin - hands

In case of risk of direct contact or splashes you must wear gloves of EN 374. The gloves must not become stiff by low temperatures and should be easy to remove.

Protection of skin - other

In case of risk of direct contact or splashes you must wear all-covering fire resistant clothing 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 or lower ignition limit

Properties	Propane	Butane	LPG mix	Iso-butane
Physical state	Liquified gas Colourless	Liquified gas Colourless	Liquified gas Colourless	Liquified gas Colourless
Odour	Odourless - distinct and unpleasant odour when stenchd	Odourless - distinct and unpleasant odour when stenchd	Odourless - distinct and unpleasant odour when stenchd	Odourless
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 point/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 -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	Flammable	Flammable	Flammable	Flammable
Lower/upper ignition 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/m ³ 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/m ³ by 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-oktanol-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
Oxidizing properties	Not relevant	Not relevant	Not relevant	Not relevant

9.2 Other information: Not relevant

10. STABILITY AND REACTIVITY

10.1 Reactivity

Not self-reactive.

10.2 Chemical stability

Stable.

10.3 Possibility of hazardous reactions

Extremely flammable.

10.4 Conditions to avoid

Ignition sources.

10.5 Incompatible materials

Only use sealing material resistant to LPG.

10.6 Hazardous decomposition products

Not relevant.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Inhalation

Not irritating. Inhalation of concentrations above 10% gas in air may cause headaches, nausea, visual disturbance and dizziness. Narcotic in high concentrations. Inhalation of high concentrations may affect the central nervous system and the cardiac function. May cause loss of consciousness and possibly death.

Skin

Not irritating (vapour gas). Frostbite from evaporation of liquified gas.

Eyes

Not irritating (vapour gas). Frostbite from evaporation of liquified gas.

Ingestion

Not relevant.

Toxicity by repeated dosage

Not known.

Carcinogenic

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

Mutagenic effects

Not classified as mutagenic.

Reproduction toxicity

Not known.

11.1.13 Other information

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

12. ECOLOGICAL INFORMATION

12.1 Toxicity

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

12.2 Persistence and degradability

Quick oxidation by photochemical reaction in air.

12.3 Bioaccumulative potential

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 Other adverse effects

Global warming potential [GWP100] for unburnt gas 3,3.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

The properties and applications of the product have the effect that there will be no waste.
Used or empty containers should be returned to Kosan Gas.

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
Transport class of hazard	Hazard warning label 2.1 Hazard number 23	Hazard warning label 2.1 Hazard number 23	Hazard warning label 2.1 Hazard number 23	Hazard warning label 2.1. Hazard number 23
Packing group	Not relevant			
Environmental dangers	Not relevant			

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
Transport class of hazard	Hazard warning label 2.1 Hazard number 23	Hazard warning label 2.1 [+13] Hazard number 23	Hazard warning label 2.1 [+13] Hazard number 23	Hazard warning label 2.1 [+13] Hazard number 23
Packing groups	Not relevant			
Environmental dangers	Not relevant			

TRANSPORT BY SHIP - IMDG

	Propane	Butane	LPG-MIX	Isobutane
UN number	1965	1965	1965	1969
UN shipping name	Hydrocarbon gas mixture, liquefied N.O.S. [propane]	Hydrocarbon gas mixture, liquefied N.O.S. [butane]	Hydrocarbon gas mixture, liquefied N.O.S.	Isobutane
Transport class of hazard IMDG Ems	Hazard warning label 2.1 Hazard number 23 F-D, S-U	Hazard warning label 2.1 Hazard number 23 F-D, S-U	Hazard warning label 2.1 Hazard number 23 F-D, S-U	Hazard warning label 2.1 Hazard number 23 F-D, S-U
Packing group	Not relevant			
Sea polluting	No			
Special precautionary measures for the user	Empty, uncleaned pressure containers must be marked with hazard warning labels, transported and handled in the same way as filled containers.			

15. REGULATORY INFORMATION

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

In accordance with EU directives No. 1272/2008 [CLP] and 1907/2006 [REACH].
Order of the Danish Environmental Department No. 1075 af 24/11/2011 [classification order].

15.2 Chemical safety assessment

No chemical safety assessment has been made.

16. OTHER INFORMATION

Explanation to risk and safety phrases under item 3

H220	Extremely flammable gas.
H225	Highly flammable liquid and vapour.
H280	Contains gas under pressure, may explode by heating.
H332	Inhalation dangerous.
H340	May cause heritable genetic damage.
H350	May cause cancer.
H400	Highly poisonous to aquatic organisms.
H410	Highly poisonous with long-term effect on aquatic organisms.
R12	Extremely flammable.

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

Date of issue: 15.01.13

Prepared in accordance with regulation 1907/2006/EU with amendment No. 453/2010.