

Material Safety Data Sheet

According to Regulation (EC) n. 1907/2006 and subsequent amendments thereto



LIQUEFIED PETROLEUM GAS (LPG)

Q8 Quaser s.r.l.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

<i>Product name:</i>	Liquefied Petroleum Gas (LPG)
<i>Synonym:</i>	Hydrocarbons, C3-C4
<i>CAS Number:</i>	68476-40-4
<i>EC Number:</i>	270-681-9
<i>Index Number:</i>	649-199-00-1
<i>REACH Registration Number:</i>	not applicable ¹

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

COMMON USE: fuel for domestic, industrial and agricultural uses, fuel for internal combustion engines, propellants, blowing and refrigerating agent.

USES ADVISED AGAINST: The uses of substances are the uses are indicated above. Other uses are not recommended.

1.3 Details of the supplier of the safety data sheet

<i>Company name:</i>	Q8 Quaser s.r.l.
<i>Address:</i>	Via dell'Oceano Indiano, 13
<i>City / Nation:</i>	00144 – Roma (Italia)
<i>Telephone:</i>	+39 06-520881
<i>Competent Technician E-mail:</i>	schede@q8.it

1.4 Emergency telephone number

Italy:	Centro Antiveneni Ospedale Niguarda (Milano), +39 02.66101029
Foreign countries:	Contact the closest Poisons Information Centre

SECTION 2: HAZARDS IDENTIFICATION

<i>Physico-chemical hazards:</i>	extremely flammable substance.
<i>Human health hazard:</i>	Non-hazardous substance according to the criteria for classification of Annex I to Part 2 of Regulation 1272/2008
<i>Environmental hazard:</i>	Non-hazardous substance according to the criteria for classification of Annex I to Part 2 of Regulation 1272/2008

¹ Substance exempt from the registration obligation according to article 2, paragraph 7, letter b) of Regulation (EC) n. 1907/2006 and f.a.

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2.1 Classification of the substance or mixture

Flam. Gas 1: H220

Press. Gas, Liquefied: H280

For full text of H-phrases see Section 16.

2.2 Label elements

Hazard pictogram(s):



Signal word: DANGER

Hazard statement(s): H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statement(s): *Generale statement:*
P102 - Keep out of reach of children
Prevention:
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Response:
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - Eliminate all ignition sources if safe to do so
Storage
P410+P403 - Protect from sunlight. Store in a well-ventilated place

Other Information: Note K (full text given in Section 16)

2.3 Other hazards

Simple asphyxiating gas at normal temperatures and pressures.

In some circumstances, the product can accumulate static electricity in significant amounts, with the risk of shocks that may cause fire or explosions. In case of accidental spills, the liquid evaporates, absorbing heat quickly, and the rapid cooling of the surfaces in contact can cause frostbite. Accidental contact or prolonged exposure to vapours may cause irritation of the eyes. The product is very volatile, even at room temperature. Exposure to high vapour concentrations, particularly in confined spaces and poorly ventilated areas, can cause respiratory irritation, nausea, faintness and dizziness, until loss of consciousness. The accumulation of vapours in confined spaces may cause asphyxiation due to

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lack of oxygen. The vapour is heavier than air and in the event of a leak, vapour may accumulate in confined spaces and low lying areas where it may easily be accidentally ignited, even from a distance.

The product does not meet the criteria for classification as PBT or vPvB required by Annex XIII of REACH.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Component	Identifier	Concentration	Classification according to Reg. (CE) 1272/2008
1. UVCB Substance: HYDROCARBONS, C3-C4	CAS Number: 68476-40-4 EINECS Number: 270-681-9 INDEX Number: 649-199-00-1 REACH Registration: n.a. ²	100%	Flam. Gas 1: H220 Press. Gas, Liquefied: H280
Depending on the characteristics and origin of the components, some of the following chemical compounds can be identified in the chemical composition on the finished product: 1,3 butadiene, H ₂ S (hydrogen sulfide), CO (carbon monoxide). These compounds are not deliberately added. This UVCB substance contains the above substances in concentrations <0.1%, therefore, they have no influence on the classification of the substance.			
2. ODORANT	-	ppm	-

3.2 Mixtures

Not applicable.

For full text of H-phrases see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist. In case of cold burns from LPG (Liquefied Petroleum Gas) involving the eyes, arrange for admission to hospital immediately.

Skin contact: Liquid product: wash affected area with water. Seek medical attention if skin irritation, swelling or redness develops and persists. Accidental rapid evaporation of liquid may cause cold burns. If there are signs of frostbite, such as blanching or redness of skin or burning or tingling sensation, do not rub, massage or compress the affected area. Seek professional medical attention or send the casualty to a hospital.

² Substance exempt from the registration obligation according to article 2, paragraph 7, letter b) of Regulation (EC) n. 1907/2006 and f.a

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Swallowing /aspiration: Liquid product: Not considered a likely route of exposure – frostbite to the lips and mouth may occur if in contact with the liquid.

Inhalation: Gas product: Move contaminated patient(s) out of the dangerous area. If the casualty is conscious, place in the recovery position. If breathing is difficult, give oxygen if possible, or assisted ventilation. Obtain medical assistance if breathing remains difficult. In the event of cardiac arrest, (no pulse), apply cardiopulmonary resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Accidental rapid evaporation of liquid may cause cold burns.

Exposure to high concentrations may cause asphyxiation as a consequence of oxygen deficiency.

4.3 Indication of any immediate medical attention and special treatment needed

When using high-pressure equipment, injection of product can occur: send the casualty immediately to hospital. Do not wait for symptoms to develop.

SECTION 5: FIREFIGHTING MEASURE

5.1 Extinguishing media

Suitable extinguishing media: Carbon dioxide. Dry chemical powder.

Unsuitable extinguishing media: do not use direct water jets on the burning product.

5.2 Special hazards arising from the substance or mixture

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including CO (carbon monoxide).

5.3 Advice for firefighters

Stop or contain leak at the source, if safe to do so. If necessary, use water sprays or fog to dilute the concentration of gas clouds below the lower explosive limit.

In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. In case of leakage of product, keep in mind that the lower explosion limit is about 1.9% v/v (ref. propane).

SECTION 6: ACCIDENTAL RELEASE MEASURES

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6.1 Personal precautions, protective equipment and emergency procedures

For non emergency personnel

Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert occupants in downwind areas. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Use only spark-free tools. If required, notify relevant authorities according to all applicable regulations.

For emergency personnel

Normal antistatic working clothes are usually adequate. Beware of accumulation in pits and confined spaces. It's possible to use special sensors to detect flammable gases or vapors. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used. The LPG (Liquefied Petroleum Gas) is heavier than air and in the event of a leak, vapour may accumulate in confined spaces and low lying areas where it may easily be accidentally ignited.

Spillages of liquid product in the water will likely result in a quick and complete vaporization of the product. Isolate the area and prevent fire/explosion hazard for ships and other structures, taking into account wind direction and speed, until the product is completely dispersed.

6.2 Environmental precautions

Prevent product from entering sewers, rivers or other bodies of water.

6.3 Methods and material for containment and cleaning up

Ventilate closed rooms and evaporate the product, favouring dispersion. Keep in mind that the vapours are heavier than air.

6.4 Reference to other sections

For more information on personal protective equipment, refer to "SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION".

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SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

Risk of explosive mixtures of vapour and air. Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products, are followed. Take precautionary measures against static electricity. Ground/bond containers, tanks and transfer/receiving equipment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep away from heat/sparks/open flames/hot surfaces. Do not smoke. Use only bottom loading of tankers, in compliance with European legislation. Do not use compressed air for filling, discharging, or handling operations. Avoid contact with skin and eyes. Do not breathe vapours. Avoid contact with the product. Use adequate personal protective equipment as needed. Contact with liquid and with containers and delivery lines from which LPG has just been drawn, should be avoided to prevent cold burns.

Do not use compressed air for filling, discharging, or handling operations. Prevent the risk of slipping. Avoid release to the environment.

7.1.2 Advice on general occupational hygiene

Avoid contact with skin. Do not eat, drink or smoke when using this product. Keep away from food and beverages. Wash the hands thoroughly after handling. Do not reuse contaminated clothing. Ensure that proper housekeeping measures are in place. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets.

7.2 Conditions for safe storage, including any incompatibilities

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. For maintenance work or conservation, emptied tanks should be purged, and blanketed with inert gas (i.e. nitrogen). Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. Store separately from oxidising agents. Handle substance within a closed system. Keep away from heat/sparks/open flames/hot surfaces.

If the product is supplied in containers, keep only in the original container or in a suitable container for this kind of product. Containers should be protected from sunlight and stored in a cool and well-ventilated place. Empty containers may contain combustible product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

7.3 Specific end use(s)

See section 1.2 (and the annex) for relevant uses.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit values: No data available

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Monitoring procedures: refer to relevant legislation and in any case to the good industrial health practices in the work place.

DNEL (Derived No Effect Level) / DMEL (Derived Minimum Effect Level):

Not derived

PNEC(S) (Predicted No Effect Concentration):

PNEC(S) Water, Sediment and Soil: The substance is a gaseous hydrocarbon UVCB. The substance is a gas and is extremely unlikely that persists in the soil compartment. Derive an aquatic PNEC for a gas it is unreasonable and technically of little use for the assessment of risk, as the substance may not be present in the aquatic environment, sediment and soil.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

If the concentration of the product or its components is greater than the exposure limits, and where the plant operating procedures and other means to reduce exposure of workers are not adequate, must be used personal protective equipment.

8.2.2 Individual protection measures

Eye/face protection: If splashing is likely, full head and face protection (protective shield and/or safety goggles (EN 166)) should be used.

Skin protection:

- i) Hand protection:** In the absence of containment systems and in case of possible contact with the skin, use gloves with hydrocarbon-resistant high cuffs, felt-lined, and insulated if necessary. Compatibility should be checked with the manufacturer. In the case, refer to UNI EN 374. Gloves must be periodically inspected and changed in case of wear, perforations or contaminations.

- ii) Other:** In case of contamination of the clothes, clean and replace them immediately.

Respiratory protection: In confined spaces: Use approved devices for respiratory protection: wear full masks with cartridge filter type AX (brown for organic vapours with a low boiling point). Large amounts of LPG vapours should create an oxygen-deficient atmosphere, and in this case only a Self-contained Breathing Apparatus (SCBA (EN 529)) should be used.

Thermal hazards: see **Eye/face protection and Skin protection**



8.2.3 Controlli dell'esposizione ambientale

No additional risk management measures required.

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8.3 Other information

No data available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	Gas
b) Odour	Distinctive bad-odour
c) Odour threshold	Not available
d) pH	Not applicable
e) Melting point/freezing point	from -188 to -138°C
f) Initial boiling point and boiling range	from -162 to -0,5°C (range)
g) Flash point	from -104 to -60°C
h) Evaporation rate	Not applicable
i) Flammability (solid, gas)	Not applicable
j) Upper/lower flammability or explosive limits	LEL 1,8% UEL 15 %
k) Vapour pressure	max 1550 kPa @ 40°C
l) Vapour density	Not available
m) Density	423-589 kg/m ³ @ 25°C
n) Solubility(ies)	24,4-60,4 mg/l (water)
o) Partition coefficient: n-octanol/water	1,09-2,8
p) Auto-ignition temperature	287-537 °C
q) Decomposition temperature	Not applicable
r) Viscosity	In accordance with column 2 of REACH Annex VII: does not need to be conducted
s) Explosive properties	In accordance with column 2 of REACH Annex VII: does not need to be conducted
t) Oxidising properties	In accordance with column 2 of REACH Annex VII: does not need to be conducted

9.2 Other information

The methods of analysis for the characteristics, which correspond to those recognized nationally and internationally, are set mostly in the technical specifications of the product.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The substance does not present additional dangers of reactivity than those reported in the next subtitle.

10.2 Chemical stability

This substance is stable in relation to its intrinsic properties.

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10.3 Possibility of hazardous reactions

Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard. A mixture with nitrates or other strong oxidisers (e.g. chlorates, perchlorates, liquid oxygen) may create an explosive mass. Sensitivity to heat, friction or shock cannot be assessed in advance.

10.4 Conditions to avoid

Store separately from oxidising agents.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

Avoid Static Electricity.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

The substance does not decompose.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicokinetics, metabolism and distribution

There are no specific studies on the absorption, distribution, metabolism and excretion of LPG in its complex but the toxicokinetics behaviour of components has been studied and reported. Dahl et al. (1988) investigated the comparative rates of uptake of the various hydrocarbon vapours by rats. Representative compounds from the chemical classes of alkenes, alkynes, alicyclic, straight-chain and branched alkanes and aromatics were investigated. It was concluded that absorption tends to increase with molecular weight so that straight chain molecules are more highly absorbed than branched isomers, and aromatic molecules are more highly absorbed than paraffins. Thus short chain C1-C4 alkanes which exist as a vapour at room temperature, are very poorly absorbed, and if absorbed, are normally rapidly exhaled.

11.1 Information on toxicological effects

a) Acute toxicity

This product is a gas at room temperature and therefore dermal and oral exposure is unlikely.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
Oral			
In accordance with section 2 of REACH Annex XI, the study does not need to be conducted as LPG Gases are			

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flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations			
Inhalation			
RAT Inhalation	LC50 (15 min) > 800000 ppm (M/F) LC50 (15 min): 1442738 mg/m3 (M/F) LC50 (15 min):1443 mg/l (M/F)	Key study Reliable with restriction Propane (CAS 74-98-6)	Clark DG and Tiston DJ (1982)
Human General Population	The odour was not detectable below 20,000 ppm (2.0%) and a concentration of 100,000 ppm (10%) and was not noticeably irritating to the eyes, nose or respiratory tract but did cause slight dizziness within a few minutes.	Weight of evidence	Anon 1982 Herman (Chairman 1966)
Dermal			
In accordance with section 2 of REACH Annex XI, the study does not need to be conducted as LPG are flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations			

(b) Skin corrosion/irritation

In accordance with section 2 of REACH Annex XI, skin irritation studies does not need be conducted as LPG are flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations. Some dose-response studies in humans have shown that propane and butane do not have irritant and corrosive properties to skin and mucous membranes. Contact with the liquefied gas can produce frostbite.

(c) Serious eye damage/irritation

In accordance with section 2 of REACH Annex XI, the study does not need to be conducted as LPG are flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.

(d) Respiratory or skin sensitization

Respiratory system:

No evidence of sensitization for the major components of the product.

Skin sensitisation:

In accordance with section 2 of REACH Annex XI, the study does not need to be conducted.

(e) Germ cell mutagenicity

No evidence of genotoxicity for the major components of LPG. The product contains 1,3-butadiene in C <0.1% w/w, therefore, results do not lead to any classification.

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The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
In vitro data Ames test Salmonella strains OECD Guideline 471	Negative	Key study Reliable without restriction Methane (CAS 74-82-8)	National Toxicology Program (1993)
In vitro data Ames test Salmonella typhimurium OECD Guideline 471	Negative	Key study Reliable with restriction Propane (CAS 74-98-6)	Kirwin CJ and Thomas WC (1980)
RAT micronucleus assay Inhalation OECD Guideline 474	Negative	Key study Reliable with restriction LPG	Huntingdon Life Sciences (HLS) (2009b)

(f) Carcinogenicity

No evidence of carcinogenicity for the major components of LPG. The product contains 1,3-butadiene in C <0.1% w/w, therefore, results do not lead to any classification.

(g) Reproductive toxicity

Effects on fertility:

Most studies have not shown consistent evidence of toxicity to fertility, therefore, results do not lead to any classification.

Based on available data, the classification criteria are not met.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
RAT, In vitro data Inhalation Exposure: 13 weeks (6 h per day, 5 days per week) OECD Guideline 413 EPA OPPTS 870.3465 (90-Day)	NOAEC: 10000 ppm (M/F) No effect on the menstrual cycle, spermatogenesis, mobility and sperm count.	Key study Reliable without restriction LPG	Huntingdon Life Sciences (HLS) (2009b)

Effects on fertility/ Developmental toxicity:

Most studies have not shown consistent evidence of developmental toxicity/teratogenicity of the major components of the product. Furthermore, the product does not contain carbon monoxide in concentrations exceeding 0.2%, therefore, results do not lead to any classification.

The following is a summary of the more representative study of the registration dossier.

Method	Results	Remarks	Reference
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<p>RAT</p> <p>Inhalation 0, 1,600, 5,000 and 16,000 ppm</p> <p>Exposure:</p> <p>Males for 2 weeks prior to mating and for an additional 28 days (minimum) after mating.</p> <p>Females for 2 weeks prior to mating and gestation days 0-19. (6 hours/day, 7 days/week) target concentration)</p> <p>0.0 ± 0.0, 1,599 ± 59, 5,186 ± 285</p> <p>OECD Guideline 422</p> <p>EPA OPPTS 870.3650</p>	<p>NOAEC (maternal toxicity): 16000 ppm (no systemic toxicity at the highest concentration tested)</p> <p>NOAEC (maternal toxicity): 19678 mg/m³ air</p> <p>NOAEC (developmental toxicity): 16000 ppm (no developmental effects at the highest concentration tested)</p> <p>NOAEC (developmental toxicity): 19678 mg/m³ air</p>	<p>Key study</p> <p>Reliable without restriction</p> <p>Ethane (CAS 74-84-0) (read- across)</p>	<p>Huntingdon Life Sciences (HLS) (2010a)</p>
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(h) STOT-single exposure

No data available.

(i) STOT-repeated exposure

Oral: In accordance with section 2 of REACH Annex XI, the study does not need to be conducted as LPG are flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.

Dermal: In accordance with section 2 of REACH Annex XI, the study does not need to be conducted as LPG are flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.

Inhalation: Propane: no neurological, haematological, or clinical chemistry effects were observed in a 6-week study to modern guidelines and GLP in which propane was administered to male and female rats by inhalation. However, at a dose of 12,000 ppm exposed male animals showed an exposure related 25% decrease in weight gain during the first week.

The lowest observed adverse effect concentration (LOAEC) in this study is 12,000 ppm (equivalent to 21,641 mg/m³).

(j) Aspiration hazard

Not applicable.

Other information

There are no further information.

SECTION 12: ECOLOGICAL INFORMATION

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Measured ecotoxicity data are not available for the aquatic toxicity endpoints and PNECs have not been derived for freshwater, saltwater, sediment, and soil. In accordance with column 2 of REACH Annex VII and VIII, the acute toxicity tests do not need to be conducted if there are mitigating factors indicating that aquatic toxicity is unlikely to occur. This product consists of substances which are gas at standard temperature and pressure and is expected to partition primarily to air.

12.1 Toxicity

The following is a summary of the more representative study of the registration dossier.

Endpoint	Results	Remarks	Reference
Aquatic Toxicity			
Invertebrates Daphnia Short-term QSAR Model	LC50 48h: 14,22 mg/l	Key study Reliable with restriction Buthane (CAS 106-97-8)	USEPA OPP (2008)
Invertebrates Daphnia Short-term QSAR Model	LC50 48h: 69,43 mg/l	Key study Reliable with restriction Methane (CAS 74-82-8)	USEPA OPP (2009)
Algae Short-term QSAR Model	EC50 96h: 7,71 mg/l	Key study Reliable with restriction Buthane (CAS 106-97-8)	USEPA OPP (2008)
Alghe verdi Short-term QSAR Model	EC50 96h: 16,47 mg/l	Key study Reliable with restriction Ethane (CAS 74-84-0)	USEPA OPP (2008)
Fish Short-term QSAR Model	LC50 96h: 147,54 mg/l	Key study Reliable with restriction Methane (CAS 74-82-8)	EPA 2008
Fish Short-term QSAR Model	LC50 96h: 24,11 mg/l	Key study Reliable with restriction Buthane (CAS 106-97-8)	EPA 2008

12.2 Persistence and degradability

Abiotic degradation:

This substance may contribute to ozone formation in the near surface atmosphere. However, the photochemical formation of ozone depends on a complex interaction of other atmospheric pollutant sources and environmental conditions.

Biotic degradation:

QSAR studies with the ethane, which has a 100% biodegradable in 16 days, were carried out. Ethane is not a component of gas oil but its structure is representative of the stream, thus is possible a read-across. On the basis of the above reported, product is biodegradable.

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12.3 Bioaccumulative potential

The LPG partition coefficients (log Pow) is estimated to have a range between 1.09 and 2.8. Therefore the product is not bioaccumulative.

12.4 Mobility in soil

Partition coefficient Koc: Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

12.5 Results of PBT and vPvB assessment

The data show that the properties of the substance do not meet the specific criteria detailed in Annex XIII or do not allow a direct comparison with all the criteria in Annex XIII but nevertheless indicate that the substance would not have these properties and the substance is not considered a PBT/vPvB (Persistent, Bioaccumulative, Toxic/very Persistent very Bioaccumulative).

12.6 Other adverse effects

No data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product: Not applicable.

Dispose wastes and contaminated packaging according to official regulations.

European Waste Catalogue code(s) (Decision 2001/118/CE): 16 05 04*. These codes can be given only as a suggestion, according to the original composition of the product, and its intended (foreseeable) use(s).

The final user (producer of the waste) has the responsibility for the attribution of the most suitable code, according to the actual use(s) of the material, contaminations or alterations. The product does not contain halogenated compounds.

Disposal of emptied containers: do not dispose the containers in the environment. Dispose in accordance with local regulations.

Do not cut, weld, bore, burn or incinerate emptied containers, unless they have been cleaned and declared safe.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN 1965

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14.2 UN proper shipping name

Italian: IDROCARBURI GASSOSI IN MISCELA LIQUEFATTA, N.A.S. (propano, butano)

English: HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (propane, butane)

14.3 Transport hazard class(es)

*Road transport (ADR):*³

Class: 2
Subsidiary risks: -

Railway transport (RID):

Class: 2
Subsidiary risks: -

Inland waterways transport (ADN):

Class: 2
Subsidiary risks: -

Sea transport (IMDG):

Class: 2, subsection 2.1
Subsidiary risks: -

Air transport (IATA):

Class: 2, section 2.1
Subsidiary risks: -
[passenger and cargo aircraft: forbidden, without authorization by Authorities]

14.4 Packing group

PG: not applicable

14.5 Environmental hazards

Road transport (ADR):

-

Railway transport (RID):

-

Inland waterways transport (ADN):

-

Sea transport (IMDG):

-

Air transport (IATA):

-
[passenger and cargo aircraft: forbidden, without authorization by Authorities]

14.6 Special precautions for user

³ For road transport the UN number 1075 can only be used for transport that precedes or follows air or sea transport

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Transportation, including loading and unloading, must be performed by personnel who have received the necessary training required by the relevant modal regulations concerning the transport of dangerous goods.

Cylinders should be kept in an upright position and transported only in a safe position, preferably on a vehicle in a well ventilated open or open trucks.

During loading and unloading apply safety measures required by section 7.1 and individual protection measures required by section 8.2.2 of this SDS.

General additional information

Mark and labeling: WARNING LABEL N. 2.1
(except packaging exemption)

Additional information on road transport (ADR)

Tunnel restriction code: (B/D)
Hazard Identification Number (tank): 23
High Consequence Dangerous Goods (HCDG): YES, only for tank over 3000 L

Additional information on railway transport (RID)

Additional mark and labelling: Mark N.13 + ORANGE STRIP
Hazard Identification Number (tank): 23
High Consequence Dangerous Goods (HCDG): YES, only for tank over 3000 L

Additional information on internal waterways transport (ADN)

Hazard Identification Number (tank): 23
High Consequence Dangerous Goods (HCDG): YES, only for tank over 3000 L

Additional information on sea transport (IMDG)

Emergency measures on board: EmS F-D, S-U

Additional information on air transport (IATA)

Additional labelling: CARGO AIRCRAFT ONLY
Emergency measures in case of aircraft accidents: ERG Code 10L

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable (refer to Annex I of MARPOL Convention).

SECTION 15: REGULATORY INFORMATION

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

Authorisations according to REACH Regulation (Title VII):

Product not subject to authorisation.

Restrictions according to REACH Regulation (Title VIII):

Product subject to restrictions: entry 40 (flammable substances)

Other European Regulation and National Legislation

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- Directive 2012/18/UE and Italian D. Lgs. 105/2015, on the control of major-accident hazards involving dangerous substances.

Seveso category:

Annex 1, part 1: category P2- flammable gas

Annex 1 part 2: category 18- Natural gas

- Directive 98/24/EC and Italian D. Lgs. 81/2008 e s.m.i., on the protection of the health and safety of workers from the risks related to chemical agents at work
- Italian D. Lgs. 152/2006 e s.m.i., on waste disposal

15.2 Chemical safety assessment

Chemical safety assessment has not been carried out for the product.

SECTION 16: OTHER INFORMATION

Revision Index:

First issue date: 01/12/2010

Revision Number: 01

Revision Date: 20/05/2016

Grounds for review: Deletion of classification according to Directive 67/548/CEE and related references
Precautionary statement P210 modified
Deletion of Note H and Note U
Section 8 updated
Section 12 updated
Section 14 updated
Section 15, subsection 15.1 updated

Revision Number: 02

Revision Date: 15/02/2018

Grounds for review: Section 14 updated

Revision Number: 03

Revision Date: 29/07/2019

Grounds for review: Section 1.2 updated
Section 2 precautionary statements updated according to the 8th ATP of the CLP
Subsection 3.1 Substance updated

Legend to abbreviations and acronyms

ACGIH	=	American Conference of Governmental Industrial Hygienists
API	=	American Petroleum Institute
CSR	=	Chemical Safety Report
DNEL	=	Derived No Effect Level
DMEL	=	Derived Minimum Effect Level
EC50	=	Effective Concentration, 50%
EL50	=	Effective Load, 50%

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Klimisch	=	Criterion for the evaluation of the method reliability
LC50	=	Lethal Concentration, 50%
LD50	=	Lethal Dose, 50%
LL50	=	Lethal Load, 50%
NOAEC	=	No Observed Adverse Effect Concentration
NOAEL	=	No Observed Adverse Effect Level
NOEL	=	No Observed Effect Level
OECD	=	Organisation for Economic Co-operation and Development
PNEC	=	Predicted No Effect Concentration
PBT	=	Persistent, Bioaccumulative and Toxic
STOT	=	Tossicità specifica per organi bersaglio
(STOT) RE	=	Specific target organ toxicity — repeated exposure
(STOT) SE	=	Specific target organ toxicity — single exposure
TLV®TWA	=	Threshold Limit Value – time-weighted average
TLV®STEL	=	Threshold Limit Value – short-term exposure limit
UVCB	=	Unknown or Variable composition, Complex reaction products or Biological materials
vPvB	=	very Persistent and very Bioaccumulative
P	=	Persistent
vP	=	very Persistent
B	=	Bioaccumulative
vB	=	very Bioaccumulative

Key literature references and sources for data

ECHA

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008

Expert judgment and/or Calculation method.

Full text of appropriate statements

Hazard Statements

H220:	Extremely flammable gas
H280:	Contains gas under pressure; may explode if heated
H340:	May cause genetic defects
H350:	May cause cancer

Hazard Classes

Flam. Gas 1:	Flammable gas
Press. Gas, Liquefied:	Gases under pressure, liquefied

Notes

note K: The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0,1 % w/w 1,3- butadiene (EINECS No 203-450-8). If the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P210-P403 (Table 3.1) or the S-phrases (2-)9-16 (Table 3.2) should apply. This note applies only to certain complex oil-derived substances in Part 3.

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Advice on workers training

Properly train workers potentially exposed to this substance on the basis of the contents of this safety data sheet

To the best of our knowledge, the information contained herein is accurate. This information is intended to describe the product for the purposes of health, safety and environmental requirements only and it should not therefore be construed as guaranteeing any specific property of the product. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. Uses not listed in this document are not recommended unless an assessment is completed.

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Because the LPG is not an hazardous substance to health and to environment neither exposure assessment or risk characterization are required. It is therefore not necessary to draw up Exposure Scenarios.

Below is the qualitative risk assessment for flammable substance.

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QUALITATIVE RISK ASSESSMENT FOR FLAMMABLE SUBSTANCES

General information on risk management for physico-chemical hazards

This general approach for assessment of qualitative risk aims to reduce / avoid contact or incidents with the substance. The implementation of the RMM and operational conditions described in the annex will ensure that the probability of an event occurring due to the hazard of the substance is negligible, and the risk can be considered as "controlled"

The substance is classified as H220 (extremely flammable gas). The following RMM and operational conditions would guarantee an acceptable risk level.

Flammability Hazard: Do not handle until you have read and understood all warnings. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Take precautionary measures against static discharge. No smoking.

Qualitative risk assessment for flammable substances

The scenarios, relevant to REACH, are related to minor incidents that may occur in the workplace and those relating to the consumer's use. Relevant incidents caused by chemicals are regulated by the Seveso II Directive and do not need to be considered in this context.

Risks from physico-chemical hazards of the substances can be controlled by implementing the specific risk management measures for each individual risk. In order to control the risks associated with flammable substances and to demonstrate that the substance can be handle in a safe way, the following measures must be implemented.

For all substances classified as flammable the safety data sheets, in which appropriate risk management measures are identified and communicated, should be made available to users.

Qualitative assessment of the physical risk

A choice of the following organizational and technical measures should be carried out to prevent ignition of flammable substances. These measures are appropriate to prevent minor incidents that may occur in the workplace or during the consumer's use. For large manufacturing facilities or the use of substances in large quantities of flammable properties you should follow the ATEX Directive (94/9 / EC and 99/92 / EC) to control the risks arising from explosive atmospheres and flammable substances.

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General RMMs: handling and storage of flammable substances

	Preventive measures for the handling and transportation of the substance			
	Industrial	Professional	Consumer	
<p>Prevention: P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</p> <p>Reaction: P377: Leaking gas fire – do not extinguish unless leak can be stopped safely. P381: Eliminate all ignition sources if safe to do so.</p> <p>Storage: P410+403: Protect from sunlight and store in a well ventilated place.</p>	Avoid splashing during refilling (Not applicable for gases)	x		
	Do NOT use compressed air during filling, pouring or handling.	x		
	During pumping, static electricity may create	x		
	Static electricity may generate fire	x		
	Limit the velocity in the line during pumping in order to avoid the generation of electrostatic discharge (<1m.sec-1 up to fill the submerged part of the tube to twice its diameter, then <7m.sec-1).	x		
	Limit the velocity in the line during pumping in order to avoid the generation of electrostatic discharge (<10m.sec-1).	x		
	Vapors are heavier than air, they distribute to the ground and may be a source of ignition at distance.	x		
	If volumetric pumps are used, they must be equipped with valves for liquid discharge.	x		
	Use electrical / ventilating / lighting and other explosion-proof equipment.	x		
	Use appropriate equipment for filling IBC and other containers.	x		
	IBCs and other containers must be made of suitable material.	x		
	Ensure electrical continuity by grounding of all equipment with equipotential bonding.	x	x	
	Store separately from oxidising agents	x	x	
	Extinguish all open flames. No smoking. Remove sources of ignition. Avoid sparks.	x	x	
	Handle and open container with care in a well-ventilated area.	x	x	
	Avoid overfilling.	x	x	
	Do not discharge into drains.	x	x	
	Use only with adequate ventilation.			x
	Avoid all possible sources of ignition (spark or flame).			x
	Do not cut or incinerate containers			x
Empty pressure vessels should be returned to the supplier.			x	
Storage				
Store in a containment tank, well ventilated and away from sunlight,	x			

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	ignition sources and other sources of heat.			
	Storage temperature: ambient	x		
	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.	x	x	x
	Take precautionary measures against static discharge.	x	x	x
	Store containers in a well ventilated place.	x	x	x
	Keep container tightly closed.	x	x	x

The purpose of the qualitative risk characterization is to assess: "... the likelihood that effects are avoided when implementing the exposure scenario ..." (REACH Annex 1, Section 6.5).

The general approach aims to reduce / avoid contact or incidents with the substance. However, the implementation of risk management measures (RMM) and operational conditions (OC) must be proportional to the degree of concern about the risk that the substance poses to health. The exposures must be controlled to achieve an acceptable level of risk, for which the implementation of the RMM choices will ensure that the probability of an event occurring due to the intrinsic hazard of the substance is negligible, and the risk is controlled.

For the flammability a qualitative risk assessment was conducted and risk management measures related to the handling and storage can be summarized as follows:

"The risks are under control when the ignition sources are avoided".