

## 14. TRANSPORT INFORMATION

HAZCHEM/EMERGENCY ACTION CODE: Flammable gas, 2WE.

The transport of LPG is governed by regulations, which have requirements for consignors, carriers and drivers.

Consult the references in sections 15 and 16, and in particular "Guide to the Conveyance of Dangerous Substances by Road", for transport requirements, such as warning signs / markings, fire extinguisher, lights, first aid box, etc.

## 15. REGULATORY INFORMATION

### Petroleum Gases Liquefied

EEC Number 270-704-2

### EC Labelling (effective 1st May 1997)

See reference 5 below.

### EC Classification

(F+) EXTREMELY FLAMMABLE

### Risk Phrases

R12 Extremely flammable

### Safety Phrases

S2 Keep out of reach of children

S9 Keep container in a well ventilated place.

S16 Keep away from sources of ignition.

**Danger Symbol** EC Extremely Flammable Symbol (including reference character F+)

### References

1. Dangerous Substances (Conveyance of Scheduled Substances by Road) (Trade or Business) Regulations, 1980, (SI 235 of 1980)
2. Dangerous substances (Conveyance of Scheduled Substance by Road) (Trade or Business) Amendment Regulations 1986, (SI 268 of 1986).
3. Dangerous Substances (Storage of Liquefied Petroleum Gas) Regulations 1990.
4. European Communities (Major Accident Hazards of Certain Industrial Activities) Regulations 1986 and Amendments.
5. European Communities (Classification, Packaging, Labelling and Notification of Dangerous Preparations) Regulations 1994.



## 16. OTHER INFORMATION

CONCAWE Product Dossier "Liquefied Petroleum Gas", 92/102 contains additional toxicological and ecological data.

Available from CONCAWE, Madouplein 1, B-1030, Brussels, Belgium.

Irish Standard 3213, Code of Practice for the Storage of LPG Cylinders and Cartridges.

Irish Standard 3216 Code of Practice - Bulk Storage of Liquefied Petroleum Gas.

Irish Standard 813 "Domestic Gas Installations"

Irish Standard 820 "Non-Domestic Gas Installations"

Available from the National Standards Authority of Ireland, Ballymun Road, Glasnevin, Dublin 9

Guide to the Conveyance of Dangerous Substances by Road (published by the Department of Labour)

Safety, Health and Welfare at Work Act 2005

Available from the Government Publications Office, Molesworth Street, Dublin 2.

Guide to the Code of Practice for the Storage of LPG Cylinders and Cartridges.

Flogas Customer Information Manual.

Flogas Installation Guidelines.

The Safe Installation of Propane Cylinders.

These as well as other literature and technical advice are available from Flogas, phone 041-9831041 or 021-4506688.

The information given is believed to represent good practices at the time of publication but no responsibility or liability is accepted for any loss or damage arising from the information. This product is supplied on the understanding that it will be used in the manner and for the purpose(s) specified in the Safety Data Sheet, the user having taken all precautions stipulated and complied with all Regulations, Standards and Codes of Practice. Failure to follow such directions may adversely affect any right that the user might have against the company. Before application other than as directed, advice must be obtained from Flogas.

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## Flogas LPG/Propane/Butane Safety Data Sheet



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

### Identification of preparation

**Petroleum Gases - Liquefied, under the trade names Flogas Butane, Flogas Propane, Flogas LPG, Ergas Butane, Ergas Propane, Ergas LPG, Flogas Autogas and Ergas Autogas**

N.B.: LPG (Liquefied Petroleum Gas) is a generic term to describe mixtures of hydrocarbons predominately in the C<sub>3</sub> or C<sub>4</sub> range.

### Application

Multi-purpose product with applications including gaseous fuel for domestic, commercial and industrial uses; liquid fuel for propulsion; aerosol propellant. For specific advice, consult Flogas.

### Company Identification

#### Flogas Ireland Ltd

Knockbrack House,  
Matthews Lane, Donore Road,  
Drogheda, Co. Louth

### Telephone :

041-9831041 or 021-4506688

### Emergency Telephone Number

041-9831041 (24 hours) or 021-4506688 (24 hours)

## 2. HAZARDS IDENTIFICATION

Extremely flammable - readily forms explosive air-vapour mixtures at ambient temperature (in concentrations ranging from 2% to 10%, approximately).

Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, into basements, etc.).

Liquid leaks generate large volumes of flammable vapour (approximately 250 : 1).

Cold burns (frostbite) may result from skin/eye contact with liquid.

Liquid release or vapour pressure jets present a risk of serious damage to the eyes.

Abuse involving wilful inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness or might prove fatal. Inhalation may cause irritation to the nose and throat, headache, nausea, vomiting, dizziness and drowsiness. Unconsciousness or asphyxiation may result in poorly ventilated or confined spaces.



## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Chemical Composition

Butane : Eines No. 203-448.1; CAS No. 106-97-8

Propane : Eines No. 200-827-9; CAS No. 74-98-6

Commercial LPG, Butane and Propane are blends of hydrocarbon components. Commercial Propane is C<sub>3</sub> rich, Commercial Butane is C<sub>4</sub> rich. For safety reasons, Ethyl Mercaptan is added as an odourising agent (approximately 20 ppm), and Methanol may be added as an anti-icing agent.

**Classification** : Extremely Flammable. See section 15.

## 4. FIRST-AID MEASURES

**Eyes:** Immediately flush eyes with plenty of cool water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get immediate medical attention.

**Skin:** In case of cold burns, immediately place affected area in warm water (40°C approx.) and keep immersed until circulation returns. Get immediate medical advice.

**Inhalation:** If exposure causes drowsiness, headache, blurred vision or irritation, remove to fresh air. Keep warm and at rest and seek medical attention. If unconscious, place in recovery position and immediately obtain medical assistance. While awaiting assistance, monitor pulse and breathing and administer mouth to mouth resuscitation if necessary. Severe inhalation over exposure to LPG may sensitise the heart to catecholamine-induced arrhythmics. Do not administer catecholamines to overexposed individuals. Contact the Poisons Information Service and/or seek further medical advice.

## 5. FIRE-FIGHTING MEASURES

In the case of fire, activate emergency systems and/or sound the alarm. Call the fire brigade. Call Flogas 041-9831041 (24 hours) or 021-4506688 (24 hours). Vacate all unnecessary personnel from the area. Ensure an escape route is always available from any fire. If it is safe to do so, close the container valve(s), using a protective water spray if necessary. If unable to cut off supply of gas, allow it to burn, except where the fire is impinging on the vapour space of an LPG vessel and the vessel surface cannot be kept cool using water sprays - in this case, extinguish the fire to avoid the risk of the vessel rupturing.

Keep LPG cylinders or tanks cool with copious quantities of water spray, as pressurised containers are liable to explode if subjected to high temperatures.

Small LPG fires can be attacked with dry powder fire extinguishers, provided the fuel supply can be turned off after the fire is extinguished.

In confined spaces, use self-contained breathing apparatus.

*Combustion products* : - see section 10 of this Safety Data Sheet.

## 6. ACCIDENTAL RELEASE MEASURES

As these substances have a very low flash point any spillage or leak is a severe fire and/or explosion hazard.

If a leak has not ignited, stop gas flow at container (e.g. by turning off valves or by fitting caps to filler valves or cylinder service valves) and eliminate all sources of ignition. If the leak cannot be stopped or if a significant leak has occurred, evacuate personnel, activate emergency systems and/or sound the alarm. Stay upwind of release. Inform the emergency services. Inform Flogas 041-9831041 (24 hours), 021-4506688 (24 hours).

Liquid leaks generate large volumes of flammable vapour, heavier than air, which may travel to remote sources of ignition (e.g. along drainage systems).

Where appropriate, use water spray to disperse the gas or vapour.

Vapour may collect in any confined space. Cover drains, sewers, etc. if necessary.

If spillage has occurred in a confined space, ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry.

Do not enter a vapour cloud except for rescue or attempting to stop leakage. Self-contained breathing apparatus or protective water sprays or ideally both should be used for personnel entering a vapour cloud.

Wear protective clothing. See Exposure Controls/Personal Protection, Section 8, of this Safety Data Sheet.

In the event of a major leak, contact the appropriate authorities.

Small quantities of spilled liquid may be allowed to evaporate. Vapour should be dispersed by effective ventilation.

## 7. HANDLING AND STORAGE

### Handling Precautions

Ensure good ventilation and avoid inhalation of vapour. Avoid contact with the eyes.

Avoid contact with liquid and cold (refrigerated or ice-covered) storage containers.

When handling cylinders wear protective footwear and suitable gloves. When handling cylinders (above head height) protective headgear may be necessary. Cylinders must be upright always (in handling, storage or use).

When dispensing liquid, wear suitable gloves and safety goggles or face shields and follow the instructions provided.

### Storage Conditions

Store and use only in equipment/containers for use with these products. Storage is governed by specific Regulations; storage in bulk tanks must be in accordance with Irish Standard 3216, and storage in cylinders must be in accordance with Irish Standard 3213. Installation should be in accordance with relevant codes and standards, see section 16, and work must only be carried out by competent persons. Always follow instructions and signage provided, particularly in the case of filling LPG containers by non-Flogas personnel. If any is missing, request replacements from Flogas.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits	Long Term Exposure Limit (ppm) (8 hour TWA)	Short Term Exposure Limit (ppm) (10 min period)
Butane	600	750
LPG	1,000	1,250
Propane	None Established. Considered to be an asphyxiant at high concentration in air	

\* as per HSC Eh40 and ACGIH

### Ventilation

Store the product in a well ventilated place. Use local ventilation to control exposure of the product to below the recommended limits in the table above.

### Protective Clothing

*Respiration* - If significant exposure to vapour is anticipated, use approved respiratory equipment.

*Hand Protection* - Use impervious gloves when dispensing liquid. Use suitable protective gloves when handling cylinders.

*Eye Protection* - Use chemical goggles or face shield when dispensing liquid.

*Skin Protection* - Wear suitable protective overalls with long sleeves to cover exposed skin.

*Head Protection* - When handling cylinders above head heights, protective headgear may be necessary.

*Foot Protection* - Wear safety boots or shoes when handling cylinders.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**NB: These are typical values**

	Units	Butane	Propane
Physical state		Gas when at atmospheric pressure and above boiling point.	Liquid under pressure.
Colour		Colourless	Colourless
Odour		Odourless, but odourant added to provide a distinctive smell.	
Boiling point	°C	-2	-42
Flash point (PMC)	°C	-60	-104
Flammability limits (in air)	%	1.9 to 8.5	2.3 to 9.5
Auto flammability	°C	410 to 550	460 to 550
Gauge vapour pressure	bar	2 at 25°C	8.6 at 20°C
Vapour density relative to air		2.0 at 15°C	1.5 at 15°C
Solubility in water			Insoluble
Specific gravity of liquid		0.575	0.508

## 10. STABILITY AND REACTIVITY

**Stability** Stable at ambient temperatures. Hazardous polymerisation reactions will not occur.

**Material to Avoid** Avoid contact with strong oxidising agents.

**Hazardous Decomposition Products** None (normally Carbon Dioxide). Incomplete combustion will generate Carbon Monoxide, which is toxic.

*Note* - can form explosive mixture with air.

## 11. TOXICOLOGICAL INFORMATION

**Eyes:** Will present a risk of serious damage to the eyes if contact with liquid or vapour pressure jet occurs.

**Skin:** Will cause cold burns (frostbite) if skin contact with liquid occurs.

**Inhalation:** Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness.

**ABUSE:** Under normal conditions of use the product is not hazardous; abuse involving deliberate inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness and/or result in a sudden fatality.

**Ingestion:** Not applicable, product is a gas.

**Carcinogenicity:** No known behaviour.

**Mutagenicity:** No known behaviour.

**Teratogenicity:** No known behaviour.

## 12. ECOLOGICAL INFORMATION

### Mobility

Spillages are unlikely to penetrate the soil.

### Persistence and degradability

Unlikely to cause long term adverse effects to the environment. Will photodegrade under atmospheric conditions.

### Bioaccumulative potential

This material is not expected to bioaccumulate.

### Aquatic toxicity

Unlikely to cause long term effects in the aquatic environment.

*For further ecological information, see reference in Other Information, section 16 of this Safety Data Sheet.*

## 13. DISPOSAL CONSIDERATIONS

Product discharge may only be carried out by Flogas. Do not interfere with LPG tanks or cylinders.

Do not dispose of any LPG container. Return all cylinders to the supplier for disposal. Tanks which are the property of Flogas should only be uplifted or disposed of by Flogas. Tanks and cylinders which are not the property of Flogas should only be disposed of in consultation with the original tank or cylinder supplier.