CALOR

Liquefied Butane Gas

Safety Data Sheet





Safety Data Sheet No 2 Revision 13

Replaces Revisions 03/00, 04/03, 08/05, 03/06, 06/09, 02/10, 12/10, 07/11, 12/14, 09/16, 03/17, 07/23

This safety data sheet (SDS) has been prepared in accordance with the requirements of UK REACH & United Nations Global Harmonisation System (GHS).

Liquefied Butane Gas

Safety Data Sheet



1. Identification of the Substance / Mixture and of the Company / Undertaking	
1.1 Product Identifier	
Substance Name	Liquefied Butane Gas (odorised)
Product Description	Liquefied Butane Gas consisting predominately C_4 Hydrocarbons supplied as a fuel in a closed system meeting the requirements for commercial butane of BS4250 with <0.1% 1,3 Butadiene.
Trade Name(s)	Calor Butane & BBQ Gas
CAS Number	106-97-8
EC Number	203-448-7
Reach Registration Number	Exempt as Liquefied Petroleum Gas (LPG)
1.2 Relevant identified uses of the substance or mixture and uses advised against	
Identified Use(s)	Multi-purpose product intended for uses including fuels for equipment which has been specifically designed to run on commercial butane and fuel feedstock for the petrochemical industry
Uses Advised Against	Anything other than the above
1.3 Details of the Supplier of the safety data sheet	
Company:	Calor Gas Limited
Address:	Second Floor, Point 3, Haywood Road, CV34 5AH
Telephone:	01926 330088
Web Address:	www.calor.co.uk
E-mail (competent person)	healthandsafety@calor.co.uk
1.4 Emergency telephone number	
Emergency Number:	0345 7 444 999 (Availability 24/7)
Language spoken	English

2. Hazard Identification

2.1 Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC
F+; R12 - extremely flammable

Classification according to Regulation (EC) No 1272/2008 as amended.

Physical Hazards	
Flammable gas, category 1	H220: extremely flammable gas
Gases under pressure	H280: contains gas under pressure; may explode if heated

2.2 Label Elements

Label elements according to Regulation (EC) No. 1272/2008

Hazard Pictograms		
Signal words:	Danger	
Hazard statements:	H220: extremely flammable gas H280: contains gas under pressure; may explode if heated	
Precautionary Statements:		
Prevention:	P102 Keep out of the reach of children P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P243: Take precautions against static discharge	
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.	

2.3 Other Hazards

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

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

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

The material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII

3. Composition and Information on Ingredients

3.1 Substance

Not Applicable. The material is regulated as a mixture

3.2 Mixtures

Product is a mixture and is exempt from REACH Registration by virtue of Article 2(7) of Regulation 1907/2006/EC

Identifier Name	Index No.	CAS No.	EC No.	%v/v
Petroleum gases, liquefied	649-202-00-6	68476-85-7	270-704-2	>99%
1,3 Butadiene	601-013-00-X	106-99-0	203-450-8	<0.1%
Ethyl Mercaptan (odorant)	016-022-00-9	75-08-01	200-837-3	<0.005

4. First Aid Measures

4.1 Description of first aid measures

Inhalation:	Remove the affected person to fresh air. Keep the patient warm and at rest. If breathing has stopped administer artificial respiration. Give external cardiac massage if necessary. If the person is breathing, but unconscious, place them in the recovery position. Obtain medical assistance immediately.
Skin Contact:	Burns should be flushed with tepid water to normalise temperature and until circulation returns. Cover the burns with sterile dressings. Do not apply ointments or powders. Obtain medical assistance immediately.
Eye Contact:	Cold burns should be flushed immediately with tepid water to normalise temperature. Hold eyelids apart while flushing to rinse entire surface of the eye and lids with water. Cover the eye with a sterile dressing and obtain medical assistance immediately.
Ingestion:	Not applicable.
Protection for First-Aiders:	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

4.2 Most important symptoms and effects, both acute and delayed

Frostbite (cold burn). The vapour may have narcotic effect. Overexposure may cause adverse effect such as drowsiness, dizziness, disorientation, vertigo. Severity of the symptoms will vary dependent on the concentration and the length of exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor - treat symptomatically.

5. Fire Fighting Measures

5.1 Extinguishing Media

Large Fires	• None. Product flow must be stopped and container cooled by water spray. Water fog should be used to assist approach to source of the fire. Large fires should only be fought by the Fire Brigade. • DO NOT USE WATER JET

Small Fires	• Dry powder • DO NOT USE WATER OR FOAM

5.2 Special hazards arising from the substance or mixture

These materials are delivered, stored and used at temperatures above their flash point.
Avoid all naked flames, sparks, cigarettes, etc.

IN CASE OF FIRE, EVACUATE THE AREA AND IMMEDIATELY ALERT THE FIRE BRIGADE

- Ensure an escape path is always available from any fire.
- If gas has ignited, do not attempt to extinguish but, if safe to do so, stop gas flow and allow to burn out.
- Use water spray to cool heat-exposed containers and to protect surrounding areas and personnel effecting shut-off.
- Beware of vapour accumulating to form explosive concentrations. Explosive vapours may travel, be ignited at remote locations and flash back. A water spray may be used for vapour dispersal.

Pressurised containers are liable to explode violently when subjected to high temperatures.

Every precaution must be taken to keep containers cool to avoid the possibility of a boiling liquid expanding vapour explosion (BLEVE).

Fires in confined spaces should be dealt with by trained personnel wearing approved breathing apparatus.

5.3 Advice for the firefighters

Fight fire with normal precautions from a reasonable distance. Firefighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment.

6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Immediate Emergency Action:	• Clear people away from the area to a safe place • Do not operate electrical equipment unless flameproof • Summon aid of emergency services • Treat or refer casualties if necessary
Further Action – Fire, if safe to do so	• Stop product flow • Use dry powder or carbon dioxide extinguishers • Cool containers exposed to fire by water fog / spray
Further Action – Spillage, if safe to do so	• Extinguish naked lights, e.g. cigarettes – AVOID MAKING SPARKS. Do not use a mobile phone • Isolate power from sources of ignition and ventilate the area • Position firefighting equipment • Try to stop the flow of liquid product • Cover drains and sewers. Disperse vapour with water spray **Note:** *Vapour may collect in confined spaces*

6.2 Environmental Precautions

Avoid release to the environment. Contain the spillage. Any large spillage into water courses must be informed to the relevant authorities.

6.3 Methods and material for containment and cleaning up

Only trained and properly protected personnel must be involved in clean-up operations.

Small scale:	Contain spillages with sand, earth or any suitable adsorbent material. Allow small spillages to evaporate provided there is adequate ventilation. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete.
Large scale:	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. Notify police and fire brigade as soon as possible.

6.4 Reference to other sections

See sections 8 & 13

7. Handling and Storage

General	Cylinders containing Calor Liquefied Butane Gas are designed to give liquid or vapour offtake. • Vapour offtake cylinders must be used in the vertical position with the outlet valve at the top. • Liquid offtake cylinders must be stored and used in the position indicated on the cylinder. A face shield or safety goggles and impervious rubber gloves should be worn when transferring this product as a liquid.

7.1 Precautions for safe handling

- No smoking or naked lights
- Switch off mobile phones
- Ensure good ventilation
- Avoid inhalation of vapour
- Avoid contact with liquid and cold storage containers
- When handling cylinders wear protective footwear and suitable gloves.
- Avoid contact with eyes.

7.2 Conditions for safe storage including any incompatibilities

Calor Liquefied Butane Gas must be stored in purpose designed mild steel cylinder(s) or tank(s) or other systems of suitable pressure rating. These should be segregated from oxidant gases and other oxidants in store. Reference should be made to the relevant Codes of Practice for Safe Storage and Handling of LPG produced by HSE and Liquid Gas UK (See Section 16)

- No smoking or naked lights
- Switch off mobile phones
- Store and use only equipment / containers designed for use with this product
- Store and dispense only in well-ventilated areas away from heat and sources of ignition
- Containers must be labelled properly
- Do not remove warning labels from containers
- Check that cylinders are within test date. If overdue for inspection they must be returned to Calor Gas Limited.
- Ensure that pipework and handling equipment are designed for the purpose, inspected, maintained and are electrically bonded and grounded (earthed) to prevent accumulation of static charge
- Explosive air / vapour mixtures may form at ambient temperature

7.3 Specific End Use(s)

Calor Liquefied Butane Gas is a multi-purpose product intended for uses including:

- Fuel for equipment which has been specifically designed to run on commercial butane.
- Feedstock for the petrochemical industry.

Note: *Product spilt on clothing may give rise to delayed evaporation and subsequent fire hazard*

8. Exposure Controls / Personal Protection

8.1 Control Parameters

The following limits are taken from the Health and Safety Executives Guidance Note EH40 Workplace Exposure Limits.

		Long Term Exposure Limit (LTEL) (8hr TWA)	Short Term Exposure Limit (STEL) (15 min Period)
8.1.1 Occupational Exposure Limit Values	**Butane**	600 ppm (1450 mg/m^3)	750 ppm (1810 mg/m^3)
	Liquefied Petroleum Gas	1000 ppm (1750 mg/m^3)	1250 ppm (2180 mg/m^3)
Recommended Monitoring Procedures	Personal or workplace atmosphere monitoring may be required to determine the effectiveness of the ventilation or other control measures and / or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN:689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.		
8.1.2 Biological limit value	None established		

8.2 Exposure Controls

8.2.1 Appropriate Engineering Controls	Provide natural or explosion-proof ventilation that is adequate to ensure flammable gas does not reach its lower explosive limit.
8.2.2 Individual Protection Measures - Personal Protective Equipment (PPE)	
Protective clothing	• Wear suitable gloves and overalls to prevent cold burns and frostbite (Neoprene or LPG resistant Gauntlet Gloves). • In filling operations wear protective clothing including impervious gloves, safety goggles or face shields to BS:EN:166, 167 & 168. • When handling cylinders wear protective footwear to BS:EN:345
Respiratory protection	• If operations are such that significant exposure to vapour may be anticipated, then suitable approved respiratory equipment should be worn. • Respiratory Protective Equipment (RPE) may be used and the selection of RPE must be based on actual or anticipated exposure levels and the safe working limits of the selected RPE. Material: Filter AX Guidance: EN:14387, *Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements testing and marking.* • Respirators **must not** be used in oxygen-deficient atmospheres. If there is a risk of oxygen depletion, then suitable breathing apparatus is required. • The use of respiratory equipment must be strictly in accordance with manufacturers' instructions and any statutory requirements governing its selection and use. • All wearers of respiratory protection must be trained in its use. The nature of the atmosphere and the working environment will determine the protection required. Equipment must be to the relevant British and European Standards and this may be determined by reference to BS:4275: *Recommendations for the selection, use and maintenance of respiratory protective equipment.*
8.2.3 Environmental Exposure Controls	Not applicable. The substance is a vapour at normal temperatures at pressure. In normal use it is not discharged into the atmosphere but used as a fuel.

9. Physical and Chemical Properties

9.1 General Information

Appearances:	Colourless liquefied gas
Odour:	Odorant added to provide a distinctive smell
Odour threshold:	<20% of Lower Flammable Limit
Melting Point:	-138°C
Boiling Point:	-2°C
Flash Point:	-60°C (PMCC)
Evaporation Rate:	Not Available
Flammability Limits:	2% to 9% in air
Auto flammability:	410-585°C
Vapour Pressure:	2 bar at 15°C
Specific Gravity of Liquid:	0.575 at 15°C (Water = 1.0)
Specific Gravity of Vapour:	2.0 at 15°C (Air = 1.0)
Solubility in Water:	Insoluble
Viscosity:	Not established
Explosive properties:	Vapour may create explosive atmospheres
Oxidising properties:	Not oxidising

9.2 Other Information

No other information is relevant to this product.

10. Stability and Reactivity

10.1 Reactivity:

Stable under normal conditions

10.2 Chemical Stability:

Calor Liquefied Butane is stable at ambient temperatures. Hazardous polymerisation will not occur, however, it can form explosive mixture with air.

10.3 Possibility of Hazardous Reactions:

Hazardous polymerisation will not occur.

10.4 Conditions to avoid:

Sources of ignition. Storage at above 50°C.

10.5 Incompatible Materials:

Butane reacts violently with strong oxidising agents (e.g. chlorates which may be used in agriculture), peroxide, plastics, chlorine dioxide and concentrated nitric acid.

10.6 Hazardous Decomposition products:

The substance arising from the thermal decomposition of these products will largely depend upon the conditions bringing about decomposition. The following hazardous substances may result from normal combustion:

- Carbon Dioxide.
- Carbon Monoxide may be produced (if there is insufficient air for complete combustion).
- Residues which may contain various concentrations of substances like Phthalates, Adipates, Terephthalates and Thienothiophenes. These substances may damage fertility or the unborn child, may cause severe eye damage, may cause respiratory irritation or cause skin irritation. Appropriate measures should be taken in handling residue to avoid exposure, and any residue should be appropriately disposed of as hazardous waste.

11. Toxicological Information

11.1 Information on the toxicological effects

Eye Contact:	Contact with Calor Liquefied Butane Gas will present a risk of serious damage to the eyes.
Skin Contact:	Contact with Calor Liquefied Butane Gas will cause cold burns and frostbite to the skin.
Inhalation:	Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. May have a narcotic effect if high concentrations are inhaled. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression may lead to rapid loss of consciousness.
Volatile Substance Abuse:	Under normal conditions of use the product is not hazardous; however, abuse involving deliberate inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness and / or result in a sudden fatality.
Gem cell mutagenicity:	No known behaviour. Contains <0.1% butadiene
Carcinogenicity:	No known behaviour. Contains <0.1% butadiene
Reproductive Toxicity:	No known behaviour
Aspiration hazard:	Based upon available data, the classification is not met.
STOT – single exposure:	Based upon available data, the classification is not met.
STOT - repeated exposure:	Based upon available data, the classification is not met

11.2 Other information:

None

12. Ecological Information

12.1 Toxicity:

No known ecological damage is caused by this product.

Air: Calor Liquefied Butane is a mixture of volatile components which, when released to air, will react rapidly with hydroxyl radicals and ozone to give carbon dioxide and water.

Water: If released to water the product will rapidly evaporate.

Soil: If released to soil the product will rapidly evaporate.

12.2 Persistence and Degradability:

Unlikely to cause long term adverse effects in the environment

12.3 Bio-accumulative Potential:
This material is not expected to bio-accumulate.
12.4 Mobility in Soil:
Spillages are unlikely to penetrate the soil.
12.5 Results of PBT and VPvB Assessment:
Not classified as PBT or vPvB.
12.6 Other adverse effects:
No known behaviour.

13. Disposal Considerations

13.1 Waste treatment methods

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperature to prevent the formation of undesirable combustion products

13.2 Additional Information

Disposal Considerations:	• Calor Gas Cylinders are the property of Calor Gas Limited and should be returned to the local dealer / stockist. • Users are recommended to contact their local Calor Gas representative when they wish to dispose of surplus quantities of Calor Butane. • Emptying of tanks containing Calor Butane is the responsibility of Calor Gas Limited • Do not discharge product into areas where there is a risk of an explosive mixture with air. • Empty vessels and cylinders may contain some remaining product. • Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed. • Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Never incinerate, crush, weld, solder or braze empty containers.

14. Transport Information

Dangerous for Conveyance	
UN Number:	1011
UN Proper Shipping Class:	Butane
Transport Hazard Class:	Flammable Gas
Packing Group:	Special Containers
ADR / RID Proper Shipping Name:	Butane
Substance Identification Number:	1011
Class:	2
Classification Code:	2F
Label:	2.1

IATA / ICAO Hazard Class:	2.1 (forbidden on passenger aircraft)
IMO Hazard Class:	2.1
Marine Pollutant:	No
Hazard Identification Number:	23
Emergency Action Code:	2YE

15. Regulatory Information

15.1 Safety, Health and Environmental Regulations / Legislation Specific for the Substance or Mixture

This material has been classified according to the requirements of the United Nations "Globally Harmonised System of Classification and Labelling of Chemicals" (GHS), EU Regulation 1271/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (the CLP Regulation) and Article 31 of EU Regulation 1907/2006 (as amended) on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Dangerous for Supply

Hazard Statements	H220 Extremely flammable H280 Contains gas under pressure; may explode if heated
Precautionary Statements	P102 Keep out of the reach of children P403 Store in a well-ventilated place P210 Keep away from heat / sparks / open flames / hot surfaces – NO SMOKING P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely P381 Eliminate all ignition sources if safe to do so.

Note: As detailed in Annex I of CLP 2008/1272 "Closed refillable cylinders and non-refillable cylinders within the scope of EN417, containing fuel gases which are only used for combustion are **only to be labelled with the appropriate pictogram and the hazard and precautionary statements concerning flammability.** Such cylinders are exempted from carrying the risk and safety phrases relating to health effects."

P410 & P403 may be omitted for gases filled in transportable gas cylinders in accordance with packing instruction P200 of the UN RTDG, Model Regulations

Product label

Danger	Extremely Flammable Gas
Contains:	Calor Butane or BBQ Gas
Symbol:	Flame

GHS Label:



Transport Label:



EU Legislation

EU Directive 2012/18/EU (SEVESO III):	Listed Part 2 – Extremely Flammable

EU Regulation 1271/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (the CLP Regulation)

Relevant UK Legislation	
• Dangerous Substances and Explosive Atmospheres Regulations • The Regulatory Reform (Fire Safety) Order 2005 • Control of Substances Hazardous to Health Regulation • Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations • Provision and Use of Work Equipment Regulations • Personal Protective Equipment Regulations • Control of Major Accident Hazards Regulations	• Chemical Hazards Information and Packaging for Supply • Pressure Systems Safety Regulations • Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations • Chemical Hazard Information and Packaging for Supply Regulations • Dangerous Substances (Notification and Marking of Sites) Regulations • REACH UK

15.2 Chemical Safety Assessment

Not Applicable. Liquefied Petroleum Gas (LPG) is exempt from REACH.

16 Other Information

LEGEND	• LTEL: Long Term Exposure Limit • STEL: Short Term Exposure Limit • DNEL: Derived No Effect Level • PNEC: Predicted No Effect Concentration • PBT: Persistent, Bio-accumulative and Toxic • STOT: Specific Target Organ Toxicity • vPvB: Very Persistent and very Bio-accumulative
REFERENCES	Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to: • European Chemical Agency: Guidance on the Compilation of Safety Data Sheets • EH40 (as amended): Workplace exposure limits. • BS:4250: Specification for Commercial Butane and Commercial Propane • Liquid Gas UK Code of Practice No. 27: The Carriage of LPG Cylinders by Road & Hazard Information Labelling Requirements (November 2017) • Suppliers Safety Data Sheets
Health and Safety Advisory Literature	Liquid Gas UK produce over 30 Industry Codes of Practice which can be obtained from Liquid Gas UK: Clean, Efficient Energy from the UK Liquid Petroleum Gas Association. Further guidance the legislation listed in section 15 can be obtained www.hse.gov.uk

This Safety Data Sheet is solely intended for this product and the information is based upon the present state of knowledge. It is intended to give guidance and believed to be accurate and represent good practice at the time of publication. It does not replace the need to consult other formal documents where further information may be required.

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