SAFETY DATA SHEET

(EC Regulations 1272/2008 and 1907/2006, as amended)

MSDS No 1 Revision : 7 15/03/2018	**PRESSURIZED BUTANE AND MIXTURES**	**HELLENIC GAS CANNING "HGC" S.A.**

Rev.

1. Product identification

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	Name:	Butane, Butane – Propane mixture
	Nature:	LPG – Liquefied Petroleum Gases
7	Presentation/Packaging:	Gas cartridges under pressure: ▪ Cartridges of 190g & 500g (net weight), pierceable ▪ Cartridges of 190g & 500g (net weight) with GBS®, pierceable ▪ Cartridges of 500g (net weight) with female threaded valve 7/16"
	Brand Name:	Energas
2	Identified uses:	Multi-purpose fuel The chemical is used by the general public only
2	Producer:	Hellenic Gas Canning "HGC" Industrial and Commercial S.A.
2	Address:	Schimatari - Avlida Beach provincial street Schimatari - Viotia, Greece Location: Sesi
2	Postcode:	32009
	Phone:	+30 22620 59150 +30 22620 59458
	Fax:	+30 22620 58568
2	Emergency phone:	+30 69485 82990
1 3	E-Mail:	info@energas.gr
6	Website:	www.energas.gr

2. Hazards identification

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2	Classifications:	Flammable Gas (cat. 1) Gases under pressure – Liquefied Gas
2	GHS Pictograms:	 GHS02 GHS04
2	Signal word:	Danger
2	Hazard statement(s):	H220: Extremely flammable gas H280: Contains gas under pressure; may explode if heated
2	Precautionary statement(s):	P102: Keep out of reach of children P210: Keep away from sources of ignition - No smoking P271: Use only in well ventilated areas
4		P377: Leaking gas fire: don't extinguish unless leak can be stopped safely P381: Eliminate all ignition sources if safe to do so P403/410: Keep container in a well-ventilated place, protected from solar heat
2	CERCLA index (0-3):	health=1, fire=3, reactivity=0, durability=0
2	NFPA index (0-4):	health=1, fire=4, reactivity=0

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Other hazards: **Extremely flammable**

In the event of a leak, as gas is heavier than air, it has a tendency, in the absence of ventilation, to accumulate at the lowest possible levels. The intense heating of a container can cause it to rupture, allowing the product to escape; the ignition of vapour can give rise to deflagration or explosion.

Health hazards: **In gaseous state,** breathing in highly concentrated vapors can cause drowsiness, intoxication, narcosis and in extreme cases, coma through the rarefaction of oxygen.
In liquid state, it can cause cold burns, in particular in the event of projection.

Environmental hazards: Inapplicable in normal use conditions.

1 ## 3. Composition / Information on components

3.1 Mixture

Description: Hydrocarbon mixtures mainly containing butanes, butenes, propane and propylene, odorised by mercaptan.
Composition of mixture in the range of 80-20 up to 70-30% mole (C4-C3)

CAS No 68476-85-7

2 EINECS No 270-704-2

2 ### 3.2 Ingredients

Name	CAS No	Concenrtation	Classification
Propane	74-98-6	20-30%	Flammable Gas 1
Propylene	115-07-1	0-5%	Flammable Gas 1
Butane (isomers)	106-97-8	70-80%	Flammable Gas 1
Butene(isomers)	106-98-9	0-5%	Flammable Gas 1
Ethyl mercaptan (odorant)	75-08-1	25 mg/kg	Flammable Liquid 1

4. First aid measures

In the event of serious accidents, call a doctor or request emergency medical assistance.

Inhalation: Symptoms are mainly: headache, dizziness, narcotic effect and loss of consciousness in case of asphyxiation:
The subject should be taken outdoors and kept in a resting position.
If suffering from respiratory difficulties or loss of consciousness, call a doctor immediately and administer respiratory assistance.

Skin: Rinse thoroughly with cold water.
Remove contaminated clothing and eventually: rings, watch, bracelet; leave in place if these objects and clothing stick to the skin.
Try to heat slowly the parts reached.
For the significant cases call a doctor immediately.

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Eyes:	Immediately flush eyes thoroughly with water for at least 15 minutes keep the eye protected and consult a specialist.
Inflammation of clothing:	Hose down with water.

5. Fire-fighting measures

Flash point:	Inapplicable to Liquefied petroleum gas.
Extinguishing means:	Recommended: powder, CO2, spraying with water in certain cases. Advised: hosing with a concentrated stream of water. Ineffective: foam
Specific dangers:	Incomplete combustion creates toxic CO the inhalation of which is particularly hazardous.
Extinction:	It is dangerous to put out a flame if the leak cannot be completely stopped.
Protection of stocks:	As soon as a firebreaks out, evacuate all exposed flammable materials and LPG containers. Thoroughly cool by spraying with water all containers that cannot be evacuated. Do not hose down with a concentrated stream of water.
Container fire:	If a container that is connected to an appliance catches fire, do not throw or turn it upside-down, as this can only exacerbate the problem (spilling of liquid gas or container rupture). Never tip a container on fire. Keep people away. Try to close the valve, protecting your hands and forearms with a wet cloth. If possible, take the container outside without lying it down.
Protecting of rescuers:	Protect personnel with fire protective clothing, copious quantities of water spray or fireproof wall. Do not enter enclosed or confined space without proper protective equipment including self-contained breathing apparatus.

6. Accidental release measures

Gas or liquid leak:	Avoid contact of the liquefied gas with the skin. Do not stay in the vapour cloud (butane air mixtures). Place you behind the source. No smoking.
In case of leaks in a closed room:	Thoroughly air out the room. Keep away from all sources of ignition; avoid all electrical switching. Block off allow-level openings in close proximity (vent holes, drain holes). Keep people away. Call on specialized emergency assistance
Container:	If the leak cannot be stopped by closing the valve, take the container outdoor, avoiding any impact and dispose it in a safe area without turning it upside-down.

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Liquid spillage: Allow to evaporate.

Other information: Test atmosphere for vapours to ensure safe working conditions before other personnel are allowed into the area. Local authorities should be advised if significant spillages cannot be contained. Observe all relevant local and international regulations.

7. Handling and storage

Handling: Follow the instructions enclosed with the appliance and those indicated on the containers.
Always use in a well-ventilated area to allow for the evacuation of fumes and products of combustion (CO, CO2).
Do not smoke.
Use exclusively with suitable appliances (indication on containers).
Always use the containers in the upright position.
Close container after each use.
Odorisation allows a 0.5% gas content in the air to be detected.
If the smell of gas is detected, search for the leak with soapy water before using the appliance. Never look for a leak with a naked flame.
Never refill an empty container.
Do not heat containers.

4 Storage: According to quantities product nature store, observe the regulations in force.
In large quantities, the storage can depend of the specific regulations.
Store in well ventilated are, away from all sources of heat and ignition.
Do not expose containers to a temperature exceeding 50°C/120°F.
Do not store below floor level (basement or cellar, for example).
Store away from low-level points where vapours can accumulate.
Do not store in a vehicle (heating by the sun).
Avoid contact with strong oxidizing agents and keep away from combustible materials.
Use exclusively containers or cartridges intended to butane and comply with regulation.
Use only electrical equipment adapted (explosion proof) in the danger zones.

8. Exposure control / Personal protection

All works on installations of butane shall only be made by specially trained people and according adapted instructions.

4 Head protection: Use a helmet like for the operations of loading/unloading or storage, face shield.

4 Eyes protection: Goggles or safety glasses, to protect eyes from exposure to liquid (type EN 166).

4 Hands protection: Protective gloves against cold (neoprene or nitrile gloves – type EN 511).

4 Skin protection: Clothing fireproofed and avoiding electrostatic charges (type EN 340).

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Personal Hygiene: Hand and face washing before food consumption, smoking and the use of toilet.

9. Physical and chemical properties

Physical state: Liquid in the container, gaseous at atmospheric pressure

Colour: Liquid state: Colourless

Gaseous state: Colourless

4 Odor: Characteristic - Typical of odorized, combustible gases

Odor threshold: Reported thresholds range from 2500 to 5000 ppm

Freezing point: Lower than -130 °C

Auto-ignition temperature: Higher than 400 °C

Flammability limits: Lower: approx. 1.5 % - Upper: approx. 8.8 %

4 Flammability point: -74 °C

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	n-Butane	Propane	80% butane 20% propane mixture
Liquid specific weight kg/m^3 (15.5 °C)	582	507	567
Gas relative density (air=1)	2.006	1.522	1.909
Boiling point at 1 atm (°C)	-0.5	-42.1	-8
Relative vapour pressure (bar) at 0°C approx.	0.03 - 1	3.7 - 4.7	0.8 - 1.8
Relative vapour pressure (bar) at 50°C approx.	4 - 5.25	16 - 20.5	6.4 - 8.3
2 Flash point (°C)	-60	-105	<-60
Lower heating value kcal/kg	10940	11060	10960

Solubility: Slightly soluble in water

Butane evaporation: 1L of liquid butane got up to atmospheric pressure generates a volume of vapor about 230 L

10. Stability and reactivity

Stability: Product stable in normal conditions of use.

Decomposition product: No known decomposition products.

2 Incompatible materials: Can react with strong acids, strong oxidizers, and copper.

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Dangerous reaction: Explodes or catches fire when exposed to heat or a source of ignition. Combustion products include nitrogen, carbonic gas and water vapour. Carbon monoxide (toxic) is released during bad combustion.

11. Toxicological information

Severe toxicity: Inapplicable.
LPGs are kept in closed containers until their destruction by combustion. The greatest danger is the ignition of vapours in the air following an accidental leak. Breathing in highly concentrated vapours could result in drowsiness, intoxication or narcosis and, in extreme cases, coma.
In the event of incomplete combustion, the ensuing release of carbon monoxide can cause dizziness, headaches, loss of muscular mobility and coma.

2 Acute inhalation toxicity LC50 rat: 658 mg/lt/4hours

Carcinogenicity: 1,3 – butadiene content of the butane propellant less than 0.1%m/m. Other components are not known to be associated with carcinogenic effects.

2 STOT (single exposure): Category 3

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12. Ecological information

As they evaporate instantly and are only slightly soluble in water, LPGs present no known environmental hazards. Gas accidentally released into the atmosphere is rapidly diluted and undergoes photochemical decomposition.

4 **Persistency and degradability** : The product does not seem to damage the active sludge of biological depuration plants. The organic substances contained in product are biodegradable.

4 **Bio-accumulation potential** : Bio-accumulation factors (Log BCF in the range 1.56 – 1.78 calculated for substances contained in the product) suggest that bio-concentration is potentially moderate; in this case too, due to the poor solubility of gas in water, volatilization in air is the predominant process.

13. Disposal considerations

As containers of LPGs always contain flammable vapors, never pierce or burn a cartridge, even when empty.
Emptying a container from liquefied gas shall only be made by specially trained people and according adapted instructions.
Observe the regulations in force on waste for the disposal of empty cartridges.

4 Packaging material: Electrolytic zinced plate (cartridges) according to EN 10202 / 2001.

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14. Transport information

For transport of private use, respect the instructions written on the container, like do not store containers in a vehicle heat by the sun.
All containers meet the requirements of the transport regulations.
For transporting large quantities, follow the applicable safety regulations (road, sea, air).

3 **14.1 Land Transport (ADR/RID)**

	ADR/RID Class:	2
	UN Number:	UN 2037
	Classification Code:	5F
	Packing Group:	---
3	Hazard Label:	2.1

3	Special Provisions:	191 303 344
3	Limited Quantity (LQ):	1 L

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3	UN Proper Shipping Name:	Receptacles, small, containing gas (cartridges) without a release device, non-refillable
3	Tunnel Restriction Code:	D

14.2 Sea Transport (IMDG)

	IMDG Class:	2
	UN Number:	UN 2037
	UN Proper Shipping Name:	Receptacles, small, containing gas (cartridges) without a release device, non-refillable
3	Hazard Label:	2.1

3	Special Provisions:	191 303 344
3	EMS:	F-D, S-U
3	Marine Pollutant:	No

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3 Limited Quantity (LQ) 1 L (SV 277)

3 Packing Group ---

14.3 Air Transport (ICAO/IATA)

3 ICAO/IATA Class: 2.1

3 UN Number: UN 2037

3 UN Proper Shipping Name: Receptacles, small, containing gas (cartridges) without a release device, non-refillable

3 Hazard Label: 2.1

3 Packing Group: ---

3 Packing Instructions: Y 203 (Limited Quantity)

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3 Packing Instructions: 203

3 ERG: 10 L

3 EQ: E0

2 **15. Regulatory information**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006 as amended.

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

No data available.

Chemical Safety Assessment

No data available.

16. Additional information

3 **Revisions**

Version 1: 12/01/2012
Version 2: 24/03/2013
Version 3: 20/08/2014
Version 4: 05/01/2015
Version 5: 05/01/2016
Version 6: 01/02/2017

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4 **More Details**

Information on the present revision: each section of this MSDS was revised further to the updating of the Standard and following the information concerning safety and health of workers and environmental protection. In particular, classification and labeling were revised in order to conform to the EC Regulation 1272/2008 and to the amendments of EC Regulation 1907/2006 in relation to the new contents and form demanded for MSDS.

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Classification and labelling according to Directives 67/548/EEC and 1999/45/EEC:	
Symbol	F+
R-phrases	
R 12	Extremely flammable.
S-phrases	
S 2	Keep out of reach of children .
S 9	Store container in a well ventilated place .
S 15	Store away from heat sources .
S 16	Keep away from flames/sparks/ignition sources – No smoking.
S 23	Do not inhale gas
S 25	Avoid contact with eyes .
S 33	Avoid electrostatic charges build-up.
S 38	In case of poor ventilation, wear an adequate respiratory apparatus.
S 45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 51	Use only in well ventilated areas.
S 53	Avoid exposure – make special instructions available before use.
S 7/47	Keep container tightly closed and at temperature not higher than 50°C (to be indicated by the manufacturer).
S 20/21	Do not eat, drink nor smoke during use.
S 37/39	Wear suitable gloves. Protect eyes and face.

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Use only for the applications and with the appliances indicated on the containers.Before using this product for an experience or a new application, read carefully the instructions indicated on the container or the appliance, to know the compatibility and the safety rules.The regulation data and advice given are there to help the consumer to follow his regulatory obligations and describe any precautions, which should be taken. But this prescription cannot be considered like exhaustive.

The user has to ensure that national, international or local regulations are observed. Material Safety Data Sheet (MSDS) established in application of EEC directive 91/155 .All information contained in this sheet is based on our knowledge. This data sheet supplements the instructions include with the product, but don't replace them. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting its use can be accepted.

E N D O F SAFETY DATA SHEET