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Dear Ms Athanasiou,

Thank you for your letter and interest regarding REACH Regulation.

We are quite advanced in preparing ourselves for the implementation of REACH and we are in the process of collecting the necessary data.
Our internal planning is based on the fact that REACH entered into force in June 2007 and that pre-registration of substances started on June 1st 2008 and will last until November 30th, 2008 and registration will be completed by December 2010 (for substances produced/imported in more than 1000 tons/yr).
It is our intention to pre-register and register all substances that we place on the market and as far as feasible all their uses.
The registration of substances requires the assessment of uses and use conditions. Communication up and down the supply chain is crucial for the preparation for REACH requirements. Besides, the Safety Data Sheets of our products will be extended to include the relative exposure scenarios for the identified uses.
Our contact will be further developed as your contribution to this effort is necessary.

If you have any further questions, please do not hesitate to contact:
Mrs Kotsiki Christina, HELLENIC PETROLEUM SA - REACH Technical Focal Point,
ckotsiki@hellenic-petroleum.gr tel:+30-210-5539148 fax:+30-210-5539145

Sincerely yours,

Kostas Mademlis
Tax Market Sales Dpt

HELLENIC PETROLEUM S.A.

MATERIAL SAFETY DATA SHEET FOR LIQUEFIED PETROLEUM GAS , 4th VERSION, AUGUST 2006

1. PRODUCT AND COMPANY DATA

1.1 PRODUCT DATA :

CAS Number : 68476-85-7 **EINECS Number : 270-704-2**

USE : As fuel for industrial and home use and as catering in industrial activities.

1.2 COMPANY DATA :

- HELLENIC PETROLEUM S.A., 17th km National Road Athens – Korinthos ,193 00 ASPROPYRGOS, GREECE
- EMERGENCY TELEPHONE NUMBERS : + 30 - 210 - 5533000, + 30 - 210 - 5539000
- PERSON RESPONSIBLE FOR MARKETING THE PRODUCT : Director of Supply, International Sales and Risk Management, tel. : + 30 – 210 – 5539090.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Complex combination of light saturated and unsaturated hydrocarbons , predominantly composed of three and four carbon atoms. Also may contain minor concentrations of other hydrocarbons, saturated and unsaturated, lighter hydrocarbons (ethane, methane) or heavier (pentane) hydrocarbons.

- Pentane and heavier*, % v/v : max 2
- Concentration in sulfur*, scruples/100ft^3 , 60° F : max 15
- Ethyl -mercaptane* (odorant), ml/MT : min 25

Hazardous components : propane (roughly 15% -formal analysis), butane, 1.3-butadiene, ethyl-mercaptane

CLASSIFICATION OF THE MOST HAZARDOUS COMPONENTS °

- propane — CAS No.106-97-8 — Indication of danger: Extremely Flammable (F^+) — Risk phrases : **R12**
- butane — CAS No.106-97-8 — Indication of danger: Extremely Flammable (F^+) — Risk phrases : **R12**
- 1,3 butadiene — CAS No.106-99-0 — Indication of danger: Extremely Flammable (F^+), Carcinogenic Category 1, Mutagenic Category 2 (F ,T) — Risk phrases : **R12,R45,R46**
- ethyl- mercaptane (odorant) — CAS No. 75-08-1 — Indication of danger: Highly Flammable, Harmful, Dangerous for the environment (F, Xn, N) — Risk phrases : **R11, R20,R50/53**

3. HAZARDS IDENTIFICATION

SAFETY

- Highly flammable
- Danger of immediate formation of explosive mixture of vapors with air. The gas is heavier than air and it can travel a long distance with ignition risk and flame feedback.
- The high temperature or the flame which surrounds the area where the mixture LPG bottles are , can cause explosion without the activation of their seal.

HEALTH

- Is not hazardous to health during storage and use under conditions of pressure.
- Hazardous conditions only arise from leakages, as mixture liquefied petroleum gas vapors are heavier than air and concentrate in sewers, confined spaces, low lying areas etc.
- The presence of 1, 3 butadiene as mixture liquefied petroleum gas component in concentrations < 0.1% m/m is not harmful.

ENVIRONMENT

- Due to its high volatility, product does not produce pollution to the ground and water resources.

CLASSIFICATION AND LABELING OF PRODUCT ACCORDING TO DECISION 41/2002 OF THE SUPREME CHEMICAL COUNCIL

Symbols of danger °

Extremely Flammable

Carcinogenic Category **1***

Mutagenic Category 2 (F^+ ,T^+)

Risk phrases °: **R2, R12, R18, R44, R45 *,R46 ***

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* Current specifications, Decision 2912/76 of the Supreme Chemical Council, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 824B/77

° According to Decision 41/2002 of the Supreme Chemical Council, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 755B/2002 and the order 2004/73/ek, l216

* In case 1, 3 butadiene concentrations exceeds 0.1% m/m

4. FIRST AID

GENERAL INSTRUCTIONS
ATTENTION! The First Aid providers must keep their personal protective equipment (§ 8.2.1)

SKIN
- Remove casualty from the incident area.
- Take off clothing.
- Body parts which come into contact with the liquid must be carefully washed with cold water and soap.
- If skin looks dry, carefully anoint with lanolin cream.
- In case of frostbite the skin tissues takes a yellow color with waxy texture and when they defrost, bulged topically and they are easily infected in contaminations. Put the fingers or the frostbite infected hand in your armpit and seek medical advice immediately. Give a hot drink to the infected person (no alcohol). Cover the wound only with sterilized materials.

EYES
- Remove casualty from the incident area.
- Open the eyes for a rapid evaporation of blocked liquid
- Wash eyes carefully with plenty of tap water for 15', keeping eyelids open.
- Seek medical advice – refer to eye doctor if pain or inflammation continues after washing.

INGESTION
Remove casualty to a quiet, cool and well ventilated place.

A. If patient remains conscious
- Place patient in supine position, with feet slightly elevated.
- Loosen belt and collar
- cover with blanket.
- Seek medical advice.

B. If patient is unconscious or is conscious but breathes with difficulty

- Seek medical advice immediately.
- Place patient in supine position, with feet slightly elevated.
- Loosen belt and collar
- Cover with blanket.
- Supply oxygen, check respiration and pulse.
- If necessary, provide external cardiac massage.

C. If patient is not breathing

- Apply artificial respiration.
- Seek medical advice immediately.
- Place patient in supine position, with feet slightly elevated.
- Loosen belt and collar
- cover with blanket.
- Provide oxygen if respiration is restored.
- If necessary, provide external cardiac massage.

5. FIRE FIGHTING MEASURES
- Small fires are smothered with the use of foam, dry powder, carbon dioxide or sand.
- Large fires are faced by properly trained personnel.
- Direct interruption of catering of fire with product
- Use water for cooling tanks and containers exposed to fire.
- Use water in spray form to make the approach of staff, dealing with the incident, easier.
- Escape routes must always be open.

ATTENTION! Insufficient refrigeration of containers, has as result the rapid increase of pressure caused by the vaporization of its content and the increase of temperature in the tank, this cause the complete rupture of container and the instantaneous detonation of its content. It follows ignition and explosion of detonated mass (phenomenon BLEVE).

6. ACCIDENTAL RELEASE MEASURES

GROUND SPILLS

- Isolate spill.
- Evacuate area of people not involved in facing the incident.
- Let the liquid to evaporate.
- Avoid the entry of liquid or steam into drainage systems, underground spaces or trenches.
- Closed or limited spaces should be ventilated
- Use water in spray form to disperse vapors and protect staff dealing with the incident.

SEA SPILLS

- Spills from ships are faced according to Appendix of Protocol 1978 of the International Treaty 1973 and its amendments (MARPOL 73/78).
- Let the mixture liquefied petroleum gas to evaporate from the top of the water.
- Alert coast guard, nearest port and local authorities and shipowning company involved in incident.
- The adjacent boats should be noticed and remain away from the spill.

7. HANDLING AND STORAGE

- Loading / unloading / temperature, °C : winter months, 20-25 summer months, 30-35
- Loading / unloading / pressure, Kg/cm²: 6-8
- Storage temperature, °C : winter months, 20-25 summer months, 30-35
- Storage pressure, Kg/cm² : 6-8
- Store gas in specially designed pressurized containers (spherical containers, cylindrical containers, bottles) according to relevant regulations *.
- In case where it should be used bottles for local heating of internal spaces, it is recommended that only ONE bottle is kept in an indoor area of heating.
- It is necessary the segregation of empty bottles from the full bottles and the existence of special control system in order to check the full bottles to not be stored for big time interval.
- The bottles of mixture liquefied petroleum gas should be always maintained in shady place, with good airing, in vertical posit ion, away from bottles of pressurized oxygen. Overthrowing, cracking and the damage of bottle should be avoided,. The general terms of storage and using of mixture liquefied petroleum gas in bottles and other mobile containers determined in the relative Legislation *.
- The containers of mixture liquefied petroleum gas should maintain in outdoor areas or very well ventilated storage areas.
- It is necessary the earthed of containers, their labelling, their preventive inspection and the use of electrical equipment of non-explosive type
- The spaces where are stored large amount of mixture liquefied petroleum gas, should allocate special organisation on prevention issues of accidents and restriction of their consequences (fire-fighting systems, safety management , emergency plans), according to the relative Legislation'

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. EXPOSURE LIMITS

- American Conference of Governmental Industrial Hygienists, 2003

For mixture LPG	:	TLV- TWA (for 8 hours exposure)	1000 ppm
For propane	:	TLV- TWA (for 8 hours exposure)	2500 ppm
For butane	:	TLV- TWA (for 8 hours exposure)	800 ppm
For ethyl- mercaptane	:	TLV-TWA (for 8 hours exposure)	0.5 ppm
For 1,3- butadiene	:	TLV-TWA (for 8 hours exposure)	2 ppm

- Decree-law 90/99, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 94A/13-5-99) :

For mixture LPG	:	for 8 hours exposure limited value	1250 ppm
For propane	:	for 8 hours exposure limited value	1000 ppm
For butane	:	for 8 hours exposure limited value	1000 ppm
For ethyl- mercaptane	:	for 8 hours exposure limited value	10 ppm
For 1,3- butadiene	:	for 8 hours exposure limited value	10 ppm

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* Decision No 14858 , OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 477B/93

' Government Decision 5697/590/2000 << Determination of regulations and terms on the confrontation of dangers from big accidents in plants or units because the existence of dangerous substances.
OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 405b/29-3-2000

8.2. EXPOSURE CONTROLS

HUMAN EXPOSURE

Under closed systems production and distribution of mixture liquefied petroleum gas, the possibility of exposure is minimised (except the loss cases). Inhalation is considered the most dangerous way of exposure.

Professional exposure: In case of product loss by the production stage, the distribution, the loading, as well as the fulfillment and its transport, there is a probability of cold droplets explosion and the cause of cold burn.
It is necessary the conduct of measurements for the quantitative determination of professional exposure, the determination and the estimate of danger according to the article 4 of decision 338/2001. *
With the adoption of suitable control regulations depending on the case (establishment of processes, airing, use of personal protective equipment), is achieved minimisation of exposure.
Consumer exposure: In case of product loss by the use of bottles. It is necessary the guarantee of sufficient airing and the avoidance of wrong usage.

8.2 .1 EXPOSURE CONTROL OF WORKERS IN THE WORKING PLACE

- Cleaning, inspection and maintenance of mixture liquefied petroleum gas storage tanks, require the implementation of strict procedures and precautions, such as issuing of relevant work permits, gas freeing, use of safety belts and individual air-supplied breathing apparatuses.
- Is not allowed the entry in closed spaces when the concentration of available oxygen is <20%
- Is required natural airing or system of ventilation so that it is ensured that the stocking of mixture LPG in air does not exceed the more inferior limit of explosiveness (1.9%). Is recommended the installation of detection of flammable gases system
- Planning of work and organizational regulations according to article No. 5 Decree-law 338/2001. *
- It is necessary the observation of personal hygiene regulations and the supervision of health, according to the article No. 10 Decree-law 338/2001. *

PERSONAL PROTECTIVE EQUIPMENT (according to Directive 89/686/E.U. and its amendments)

- Use of suitable protective clothing (EN 340,.465,.466, 467), protective boots (EN 345, 346) and impenetrable gloves from PVC or nitrile (EN 420, 388) at the implementation of general work process.
- In case of hands contact with droplets of cold product, use special gloves for low temperatures (EN 60903).
- Use of glasses (goggles) or face shields for the eyes protection from droplets of humid product (EN 166, CR 13464).
- Use full cover face mask with filters for hydrocarbons in minor leak cases (EN 136 and 141 equivalents).
- At the work of cleaning and control of equipment as well as in incidents of big extent loss, use of autonomous respiratory equipment (EN 137).
- In case of big fire, is required the use of fire resistant overalls (EN 469,.533, 1486) and self contained respiratory equipment (EN 137).

ATTENTION! Remove and wash with cold water any clothing that came in contact with liquefied petroleum gas.

8.2.2 ENVIRONMENTAL EXPOSURE CONTROLS

The main way for leakage to the environment is the exposure to air at production sites and during its distribution. Checking of losses to the environment according to Directives 96/61/ΕΚ(1), 96/62/ΕΚ(2) και 2001/81/ΕΚ(3).

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* Decree-law 338/2001: "Protection of health and workers protection at the work place by dangers owed in chemical factors", OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 227A/9-10-2001
(1) 96/62/EK "Estimate and management of environment's air quality ", L 296/1996
(2) 96/61/EK "Completed prevention and control of pollution", L 257/1996
(3) 2001/81/EK "National maximum limits of emissions for certain atmospheric pollutants", L 309/2001

9. PHYSICAL AND CHEMICAL PROPERTIES

At normal atmospheric conditions the product is gas, heavier than air. It is liquefied with application of pressure. Specifically for the transport with boats, the deliquescence is achieved with refrigeration under the boiling point.

- Vapour pressure * at 100 °F PSIG : 57-144
- Volatility */Temperature of evaporation of the 95% of n/n, °F : max. 36
- Gravity of liquid' at 15.5 °C, Kg/lt : 0.51-0.58
- Relative density' of LPG vapours in relation to air : 1.5-2
- Point of ignition', °C : (- 104) – (-60)
- Lower Explosion Limit (LEL)' % : 1.9 Upper Explosion Limit (UEL)' % : 9.5

10. STABILITY AND REACTIVITY

- Thermal Stability : Stable
- Materials to be avoided : halogens, oxidants
- Conditions to be avoided : Contact with incompatible materials, expose in flame, sparks and other sources of ignition
- **ATTENTION!** The bottles should not be exposed in high temperatures.
- Hazardous products of thermal cracking: Carbon monoxide and carbon dioxide

11. TOXICOLOGICAL INFORMATION

Mixture liquefied petroleum gas is not considered toxic but as a simple asphyxiating gas. The presence of 1,3-butadiene in concentration bigger than 0.1% m/m is considered as carcinogenetic. Likely is developed hereditary genetic damage.

SKIN

In case of skin contact with humid mixture liquefied petroleum gas, the rapid evaporation causes frostbite.

EYES

At the contact with humid mixture liquefied petroleum gas droplets causes irritation of eyes accompanied from blurring and pain.

INHALATION

- Short exposure in low concentrations is not considered harmful.
- Exposure at concentrations of mixture liquefied petroleum gas above 1% can cause headache, nausea, blurring vision and drowsiness.
- The expose in very high concentrations, cause convulsions and unconsciousness
- Mixture of liquefied petroleum gas vapours, as heavier than air, tend to reduce the existing oxygen in the air, with risk of asphyxia in the event of major leaks.

12. ECOLOGICAL INFORMATION

- Released into the environment, mixture liquefied petroleum gas rapidly disperses into the air where it undergoes photochemical degradation , reacting with hydroxyl radicals of half life of approximately 3.2 days for n-butane and 3.4 days for isobutene and 7 days for propane.
- Acute aquatic toxicity prices:

Propane

dafnia, 48hr, LC_{50}[I] , ⇒ 9.3 – 19.4 mg/l algae, 72hr, EC_{50}[II] ⇒ 12.3 – 13.6 mg/l

N-butane

dafnia, 48hr, LC_{50}[I] , ⇒ 4.2 – 8.4 mg/l algae, 72hr, EC_{50}[II] ⇒ 5.3 – 5.5 mg/l

Iso-butane

dafnia, 48hr, LC_{50}[I] ⇒ 10.7 mg/l algae, 72hr, EC_{50}[II] ⇒ 7.15 mg/l

The logKow° values are <3 for propane and for butane, the bioconcentration factor values are log BCF<2 . Consequently the tendency of bioaccumulation in the aquatic organisms is considered insignificant

* Specifications, Decision 2912/76 Supreme Chemical Council, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 824V/77

' Decision Δ3/14858/93 OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 477B/93

[I] LC50: Mortal concentration for the 50% of population

[II] EC50: Concentration that causes repercussions in the 50% of population

13. DISPOSAL

- The product evaporates rapidly in usual conditions of temperature and pressure and the need of disposal is infrequent
- The redundant gases in the productive process systems are led to the torch where they burn under checked rhythm
- The final use leads to combustion (when it is used as fuel) or disseminated in atmosphere (when it is used as propulsion)
- The unverifiable combustion is avoided.
- Do not dispose in sewers
- Return the used bottles to the supplier.

14. TRANSPORT INFORMATION

- Temperature of transport:°C : wintry months, 20-25 summer months, 30-35
- Pressure of transport, Kg of/cm2 : 6-8
- Usual transportation by : Tanker vehicles, trains with special equipment, tanker-ships
  Road/Railway Transport : ADR/RID[1] 2003
- Class: 2 Code: 2 F Label: 2.1 Packing Group: 2
- Hazard identification Nr.: 23

Symbol :

UN Number : 1075

- Sea transport : IMDG – IMO[2] Code 2002 Class : 2.1

15. REGULATORY INFORMATION

Safety phrases*

S2	Keep out of the reach of children
S9	the container it is maintained in well ventilated part
S15	Keep away from heat
S16	Keep away from sources of ignition – No smoking
S33	Take protective measures against electrostatic evacuations
S38	In case of insufficient airing, use suitable respiratory equipment
S45*	In case of accident or if you feel unwell, seek medical advice immediately
S51	Use it only in well ventilated space
S53*	Avoid exposure – obtain special instructions before use

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[1] ADR: European Agreement on the International Road Transports of Dangerous Merchandises, RID: Regulations on the International Railway Transposition of Dangerous Merchandises

[2] IMDG - IMO Code: International Shipping Code of Dangerous Species of International Shipping Organism

* Annex IV, Decision AHS 41/2002, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 755V/2002

16. OTHER INFORMATION

16.1. Full text of relevant Risk* phrases, referred in paragr. 2 and 3 of the present MSDS

R2	Danger of explosion by percussion, friction, fire or other sources of ignition (*product*)
R11	Highly flammable (*ethyl-mercaptane* *)
R12	Extremely flammable (*propane* *** , *1,3-butadiene*° , product*)
R18	At the use can shape flammable/explosive mixes of steam of/air (*product*)
R20	Harmful by inhalation (*ethyl-mercaptane* *)
R44	Danger of explosion if it is heated under restriction (*product*)
R45	May cause cancer (*1,3 butadiene* °, product***)
R46	Can cause hereditary genetic damage (*1,3-butadiene* °, product* **)
R50/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment (*Ethyl- mercaptane* *)

16.2. Recommended restrictions on use

Take into consideration the points reported in 7, 8, 10.

16.3. Training advice

The information of the present document, may be used for training purposes

16.4. References

Decisions of the Supreme Chemical Council : No.195/2002 - OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 907B/17-7-2002, No.41/2002 - OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 755/19-6-2002, No.2912/76 - OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 824B/30-8-1977 , Decision Δ3/14858/93 – OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 477B/1-7-1993 , Directive 2004/73/EK-L216, 16-6-2004 and on information from bibliography according to the latest scientific developments.

16.5 Additional information/modifications in the present MSDS concerning the previous edition

According to the additional requirements of Supreme Chemical Council 195/2002 and 41/2002 and Directive 2004/73/EK specifically in the points 2, 3, 7, 8, 11,12,14,15 and 16 of MSDS.

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* Annex III, Decision AHS 41/2002, OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 755V/2002

* Directive 98/98/EK "Adaptation on 25th time in the technical progress of Directive 67/548/EOK", L 355/1998

** In case where the concentration in 1,3-butadiene does exceed 0.1% m/m, Directive 2004/73/EK "Adaptation on 29th time in the technical progress of Directive 67/548/EOK", L216/2004

***Directive 94/69/EK "Adaptation on 21st time in the technical progress of Directive 67/548/EOK", L 381/1994

° Directive 2001/59/EK "Adaptation on 28th time in the technical progress of Directive 67/548/EOK", L 225/2001?

NOTE

The above information and recommendations concern only the specific material, as determined above, and may not apply for the same material if used in combination with any other material or in any process. They are accurate and reliable, according to data which HELLENIC PETROLEUM S.A. had available on the above date.

However, HELLENIC PETROLEUM S.A. cannot guarantee their accuracy and reliability and does not assume any responsibility for loss or damage which may arise from the use of the above material.

The present SDS is supplied to consumers for them to consider and judge their adequacy concerning the particular use of the material (the attention of consumers is particularly urged in case of changes in the packing of the above product).