Material Safety Data Sheet (MSDS)

LIQUEFIED PETROLEUM GAS	GAS Nhien Lieu Xanh Master Compliance, Master Safety!
CAS Number :	68476 – 85 – 7.
UN Number:	1075
EC Number:	270-704-2
R-phrase(s):	F+; R12 Carc. Cat. 1; R45 Muta. Cat. 2; R46
Other Country Catalog Registration Number:	No information

I. IDENTIFICATION:

- Product Name: Liquefied Petroleum Gas	
- Proper Shipping Name: Petroleum Gases, Liquefied	
- Other Names: LPG, LP Gas, Liquefied Petroleum Gas, Commercial Propane, Propane, Butane	
- Name and address of the supplier: Super gas Co., Ltd. Go Dau A Port, Phuoc Thai Commune, Long Thanh District, Dong Nai Province, Vietnam.	**Contact** in emergency: 214/B12 Nguyen Trai ,Dist 1, HCMC, Vietnam - Phone: (+84 28) 39 256 553 - Mobile: (+84) 915 947 117 - www.nhienlieuxanh.com
- **Name and address of the manufacturer.:** Super gas Co., Ltd. Go Dau A Port, Phuoc Thai Commune, Long Thanh District, Dong Nai Province, Vietnam.	
- **Use(s):** Used as fuel for household and industrial combustion equipment (heater, water heaters, dryers …) civil and industrial cooking equipment or as fuel for vehicles and transportation. In addition, LPG can also be used in the production of aerosol propellant and as raw materials for the petrochemical industry. This product should not be used for purposes other than those recommended above, unless specifically instructed & advised by the supplier.	

II. COMPOSITION/ INFORMATION ON COMPOSITIONS

Mixture Description	CAS Number	Chemical Formula	Percent by volume
Propane	74-98-6	C_3H_8	
Propene	115-07-1	C_3H_6	
Iso-butane	75-28-5	C_4H_{10}	
n-butane	106-97-8	C_4H_{10}	
Metane	74-82-8	CH_4	
Ethane	74-84-0	C_2H_6	
NeoPentane	463-82-1	C_5H_{12}	

IsoPentane	78-78-4	C_5H_{12}	
n-Pentane	109-66-0	C_5H_{12}	
1,3 – Butadiene	106-99-0	C_4H_6	<0.1%
Ethyl mercaptan	75-08-1	C_2H_5SH	<0.01%

III. HAZARDS IDENTIFICATION

1. Hazards Classification:

- **EU Classification:** Extremely flammable.
- **Signal EU:** F+.

2. Safety Hazards

- Keep away from children;
- Put it in a well-ventilated place;
- Keep away from fire, No smoking.

3. Hazard statements

- **Eyes:** Contact with the skin is non-irritating. Liquid LPG can cause cold burns.
- **Inhalation:** Non-irritating (gaseous form), When inhaled to a concentration of LC50 > 5 mg/L (gaseous form) will cause acute poisoning.
- **Skin:** Contact with the skin eye is non-irritating. Liquid LPG can cause cold burns.
- **Swallowing:** No information.
- **Cause cancer:** LPG specifically has not been assessed by the International Agency for Research on Cancer. It is not considered to cause an increased cancer risk.
- **Cause mutations:** 1,3 butadiene is a chemical which may be found in LPG as an impurity from its production. Over 0,1% of 1,3-butadiene must be labelled as having the potential to cause mutations

IV. FIRST- AID MEASURES

1. Eye Contact:

DO NOT DELAY. Obtain medical treatment immediately. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eye with copious quantities of water..

2. Skin Contact:

Do not remove clothing that adheres to skin due to freezing. In the event of frostbite, slowly warm the exposed area by rinsing with warm water. Otherwise: Obtain medical treatment immediately. Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed. Loosen tight clothing. Keep warm and at rest.

3. Inhalation

Remove to fresh air. If breathing but unconscious, place in the recovery position. If breathing has stopped, apply artificial respiration. If heartbeat absent, give external cardiac compression. Monitor breathing and pulse. Seek urgent medical advice.

4. Ingestion

In the unlikely event of ingestion, obtain medical attention immediately

5. Advice to Physician

Treat symptomatically. Administer oxygen if necessary.

V. FIRE-PREVENTION MEASURES

1. Flammability ranking:

Extremely flammable

2. Products created when LPG burned:

Combustion and Carbon Monoxide (CO) – Products are Formed When LPG is Burnt. The products are formed when LPG is burnt in gas appliances, domestic and industrial, are water vapour, Carbon Dioxide and heat, and usually very small amounts of Carbon Monoxide.

3. Causes of fire and explosion:

Flame, Electrostatic, High temperature, Impact, friction.

4. Stamping out the fire And Other combinations:

Disconnect the LPG supply. If extinguishing is not possible or there is no danger to adjacent areas, the flame may be left to burn until it self-extinguishes. Only fully trained, regular firefighters are allowed to put out large fires. fire extinguisher or CO2 extinguishers can be used to extinguish small fires. Water Mist should Play water on the fire. All tanks in direct contact with fire or heat sources should be cooled by water spray.

All storage facilities must be fully equipped with appropriate fire extinguishing facilities. Big storage facilities must be equipped with an appropriately designed cooling water spray system and approved by the relevant authorities.

5. Personal Protective Equipment for fire fighting

Wearing safe goggles, protective gloves, Safety Shoes

6. Special notes on fire and explosion:

LPG vapor is heavier than air, so it can spread over the ground and pose a fire hazard from a distance. If burned continuously by fire, the container will explode due to the phenomenon of Boiling Liquid Expansion into Vapor (BLEVE).

VI. Preventive measures and response Incident

1. **When leakaging is small:**
   - Inform the responsible unit about the location and phenomenon of leakaging.
   - Isolate, evacuate people in the leak area, people who are not responsible and do not have appropriate personal protective equipment are not allowed to enter this area.
   - When entering the closed space around the leak area where there may be accumulation of hydrocarbon gas, it is necessary to wear a mask and an oxygen tank.
   - Check for gas leaks at suspicious points, prevent gas sources from leaking.
   - Prevent sources of fire, generating sparks.
   - Gas pipelines or equipment with leaks, it is necessary to safely control pressure release.
2. **When leakaging on a large scale:**
   - Immediately notify the fire brigade, describe the location and current situation.
   - Isolating, restricting, evacuating people in the area, accessing the leak area from the wind is not responsible and without suitable personal protective equipment is not allowed to enter this area
   - Prevent the source of fire, generating sparks.
   - Check for leaks at equipment and pipes in the area
   - Isolate the gas supply and depressurize the leaking pipe or equipment to a safe area dedicated to incineration.

3. **Other Notes:**
   - Immediately notify the fire brigade, describe the location and current situation.
   - Isolating, restricting, evacuating people in the area, accessing the leak area from the wind is not responsible and without suitable personal protective equipment is not allowed to enter this area
   - Prevent the source of fire, generating sparks.
   - Check for leaks at equipment and pipes in the area
   - Isolate the gas supply and depressurize the leaking pipe or equipment to a safe area dedicated to incineration.

VII. USE AND STORAGE

1. Measures and conditions to be applied when using and manipulating dangerous chemicals

- This product is intended for use in closed systems only. Not recommended for use in enclosed spaces. Do not eat, drink or smoke while using. Avoid breathing LPG vapors. When using LPG equipment, ignition sources must be used appropriately. Prevent Static electricity. Use gas only when the tank is in an upright position, except in some cases specially designed for the use of containers in the horizontal orientation.
- The process of pumping LPG can create Static electricity. Make sure the switch pipes are always open by connecting all the devices together. Do not come into contact with equipment that poses a risk of cold burn. Compressed air should not be used for charging, discharging or handling.
- Cleaning, inspection and maintenance of tanks requires follow the process, including presentation of work permit; expel the gas from the tank, ventilation; safety harness, lifeline & face shield. Before entering the tank & while cleaning, The air inside the tank must be checked & need constant supervision. instrument that measures oxygen concentration or explosion limit.
- Follow the security policy of the administration. When storing LPG in large quantities coordinates closely with the administration. on emergency response & disaster management plans.

2. The state of preservation:

- Store only in properly designed, pressurized vessels or tanks. Inventories only in properly designed, pressurized vessels or tanks. Place tanks away from heat or fire. Do not store near oxygen tanks or Strong oxidising agents. Storage areas must be equipped with appropriate fire extinguishing facilities. Keep out of reach of children.

VIII. IMPACT ON HUMANS AND PERSONAL PROTECTION EQUIPMENT REQUIREMENTS

1. Necessary contact restriction measures:

LPG vapor can move follow the ground far away. Cut off the fire source in the surrounding area and evacuate everyone. Shut off sources of leakge if safe. No access to enclosed spaces is allowed. Ensure that the leakage area is well ventilated. Avoid inhaling LPG vapo. Avoid contact with skin, eyes and clothes. If possible, take off clothes, rings, watches… sticky LPG, However, if they stick to the skin, do not attempt to remove them.. LPG-stained clothing is also a fire hazard, should dip them in water before moving to another place. Wash before using again.

2. Personal protective equipment at work:

- **Eye protection:** If there is a possibility of splashing liquefied petroleum gas, it is recommended to wearing Safety Glass or use a face shield in accordance with the EN166 standard.
- **Body protection:** If there is a possibility of splashing liquid LPG, ong-sleeved jumpsuit protectors made of 100% cotton or natural fibers should be worn.
- **Hand protection:** Wear neoprene gloves, nitrile rubber gloves or Chrome leather gloves made to EN 374 and EN420 standards. Gloves are required to be flexible at temperatures below the boiling point of the product in the atmosphere. Gloves may need to be changed frequently if immersed in liquid LPG or exposed to liquid LPG for long periods of time.

- **Foot protection:** Protective shoes manufactured according to EN345 standards should be worn when transporting and arranging LPG bottles.

3. Protective means in case of Troubleshooting:
Wear eye protection, chrome leather, neoprene or nitrile rubber gloves, safety shoes or boots.

4. Hygienic measures:

Equip bathrooms, on-site washing points: take a shower after coming into contact with Gas, do not eat, drink, or smoke in the area, during contact.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid under pressure.	**Boiling Range (^{0}C):** lower -1 °C
Color: Colourless	**Melting point (^{0}C)**: N/A
Odour: Distinctive and unpleasant if stenched, odourless if unstenched.	**Flash point:** -40 °C
Vapour pressure: ca. 345 - 980 kPa at 20 °C / 68 °F.	**Auto-ignition temperature (^{0}C):** >410
Vapour density (air=1): ca. 2.	**Upper / lower Flammability or Explosion limits: Typical:** 9%
Water solubility: Data not available.	**Explosion limits, Lower (% mixed with air):** 1.8%
PH: Data not available.	**Evaporation rate:** Data not available.
Density **(kg/m^3):** Approximately 575 kg/m3 at 15oC	**Other information:**

X. Stability and reactivity

1. Stability (thermal stability, sensitivity to friction agents, impact, etc.)
- Stable under normal conditions of use.

2. Possibility of reactions:

- Decomposition Products: Hazardous decomposition products are not expected to form during normal storage.
- Hazardous reactions.
- Fire reaction when encountering heat source: The main products of the combustion reaction are: CO2, steam and heat.
- Coincident Response: There are no Coincident Response

XI. TOXICOLOGICAL INFORMATION

Material	Threshold type	Result	Contact	Animal Testing
LPG	LC40 (4h)	>5mg	Inhalation	Mouse
Propane	LD50 (96h)	0.0086 – 0.030	Inhalation	Fish

1. Chronic effects on humans:

- This product has not been evaluated by long-term clinical exposure tests. The product may contain 1,3 - Butadiene, which is classified as a class 1 carcinogen and a class 2 mutagen with a concentration lower than 0.1% by weight.

2. Other toxic effects

XII. ECOLOGICAL INFORMATION

1. Toxicity to organisms: Causes mild acute poisoning to mammal

2. Impact to invironmental systems:

- **Biodegradability:** Oxidized quite quickly due to photochemical reaction in air.
- **BOD và COD:** Data not available.
- **Products of the Biodegradability process:** Data not available.
- **Toxicity level of biodegradation products:** Data not available.

XIII. DISPOSAL CONSIDERATIONS

1. Information on destruction regulations (legal information): no information.

2. Hazard classification of waste: no information.

3. Method of destruction: Due to the nature and uses of this product, product rejection is rare. However, if necessary, it can be handled by controlled combustion in specially designed equipment. If this is not possible, the supplier should be contacted.

4. Products of the destruction process, treatment measures: COx; steam and heat.

XIV. TRANSPORTATION REQUIREMENTS

Regulatory name	UN Number	Name of sea shipping	Types and groups of dangerous goods	Package	Shipping label	Additional information
Regulations on transportation of dangerous goods of Vietnam: - Decree No. 104/2009/ND-CP dated November 9, 2009 of the CP regulating the list of dangerous goods and the transportation of dangerous goods by air. **Road motor vehicles;** Decree No. 29/2005/ND-CP dated March 10, 2005 of the CP regulating the List of dangerous goods and the transport of dangerous goods on inland waterways.	1075	3	23	Does not apply group of packaging	Flammable gas	
Regulations on the international carriage of dangerous goods of EU, USA…	1075	2.1	2.1	Does not apply group of packging	Flammable gas	

XV. TECHNICAL REGULATIONS AND LEGAL REGULATIONS MUST COMPLY

1. Status of declaration and registration in regional countries around the world: (List the list of countries that have made the declaration, the status of the declaration): no information.

2. Hazard classification by country of declaration and registration: no information.

XVI. OTHER NEEDED INFORMATION

First compiled: April 10, 2003

Date of the most recent modification or addition: 28/04/2016

The lead drafting agency: Super gas Co., Ltd.

References:

The Institute of Petroleum, London, 'Model Code of Safe Practice', Part 9, current edition.

The UK LP Gas Association Codes of Practice.CONCAWE, Brussels, 'Liquefied petroleum gas'. Product Dossier No 92/102, 1992.

Vietnam Official Gazette No 17 , 25 March 2003 - Degree No 13/2003/ND-CP prescribing the list of dangerous goods and the land - road transport of dangerous goods.

Vietnam standard on LPG TCVN 6548:

1999 ; Vietnam standard on LPG TCVN

6486: 1999; Vietnam standard on LPG

TCVN 6484: 1999; Annex1of Directive

67/548/EEC;

EU Classification and Labeling and Control Banding, Presented by: Denese A. Deeds, CIH;

Note:

The information in this Chemical Safety Data Sheet is compiled based on valid and up-to-date knowledge of hazardous chemicals and must be used to take measures to prevent risks and accidents..

Hazardous chemicals in this sheet may have other dangerous properties depending on the circumstances of use and exposure