PAKISTAN STATE OIL COMPANY LIMITED

MATERIAL SAFETY DATA SHEET

Liqefed petroleum gas (LPG) **MSDS No. 7**

SECTION 1 – COMPANY INFORMATION

EMERGENCY TELEPHONE NUMBERS (24 hrs) : PSO House Control Room: (021)9203850

COMPANY CONTACT (business hours) : Office Manager HSE: (021)9203866-85, Ext: 2338
Mobile GM HSE & SS: 0345-8291377
Mobile Manager HSE: 0345-8282930

ADDRESS: PSO House Khyaban-e-Iqbal, Clifton, P.O.Box # 3983 Karachi 75600, Pakistan. Website:http://www.psopk.com

SUPPLIERS: NRL, PRL, PARCO, JJVL, BOSICOR, KUNNER

SECTION 2 – PRODUCT IDENTIFICATION AND USE

Product name	Liquefied petroleum gas (LPG)	**PIN (UN #)**	1075
Chemical name	Liquefied petroleum gas (LPG)	**TDG, DOT class**	2.1
Common names	Liquefied petroleum gas (LPG)	**Packing group**	None
and synonyms	Compressed petroleum gas	**Shipping name**	Liquefied petroleum gases;
Product use	Fuel, chemical intermediate		Or petroleum gases, liquefied

WHMIS classification Compressed Gas Class A
Flammable Gas Class B, Division

Hazard codes

NFPA	Health	1	**HMIS**	Health	1
	Flammability	4		Flammability	4
	Reactivity	0		Reactivity	0

NFPA & HMIS Ratings: 0=Insignificant/No Hazard. 1=Slight Hazard. 2=Moderate Hazard. 3=High/Serious Hazard. 4=Extreme/Severe Hazard.

SECTION 3 – HAZARDOUS INGREDIENTS

Ingredients	CAS#	Wt %	ACGIH-TLVs (2004)	OSHA PELs (2004)	NIOSH RELs (2004)	LD_{50} (rat, oral)	LC_{50} (rat, 4 hr)
LPG, which includes:	106-97-8	100	1000 ppm TWA	NAv	800 ppm TWA	NAp	658 mg/m^3
Propane	74-98-6	95-100	1000 ppm TWA	1000 ppm TWA	1000 ppm TWA	NAp	NAv
Butanes	106-97-8	<5	1000 ppm TWA	NAv	800 ppm TWA	NAp	658 mg/m^3

SECTION 4 – PHYSICAL DATA

Form	Gas. May be liquefied by pressurization	**Vapour**	853 kPa (8.4 atm) at 21^{o}C
Colour	Colourless	**Evaporation rate**	NAp (gas)
Odour	Very faint petroleum odour	**Boiling point**	-40^o to 80 ^{o} C (-40 to 176^{o}F)
Odour	22,000 to 36,000 mg/m^3	**Freezing point**	-190^{o}C (-310^{o}F) (propane)
Specific gravity	0.5 @ 20ºC	**PH**	NAp
Vapour density	1.55 (air = 1)	**Coefficient of water/oil**	2.36 [log P (oct)]

SECTION 5 - FIRE AND EXPLOSION HAZARDS

Flammability ☒ Yes ☐ No **Conditions** Extremely flammable, explosive gas is released when liquid evaporates.

Flash point	-104^{o}C (-156^{o}F) (cc)	**Auto ignition**	450^{o}C (842^{o}F)
Lower flammable limit	1.8-1.9% (butane)	**Upper flammable limit**	9.5%

Explosion data. Sensitivity to: **Impact** Not considered to be sensitive **Static discharge** Accumulates static charge by flow or agitation. Ignites in response to static charge of sufficient energy.

Means of extinction Stop flow. CO_2 or dry chemical

Special precautions It is extremely dangerous to extinguish fire without stopping flow of gas. Gas and air will mix; resultant explosion could be more destructive than the original fire.
Gas is slightly heavier than air. It may travel a considerable distance to a source of ignition and flash back to a leak. Can accumulate in confined spaces, resulting in an explosion and/or asphyxiation hazard. Heating can cause rapid build-up of pressure inside containers, which may rupture explosively.

Hazardous combustion products Smoke. Carbon dioxide. Carbon monoxide.

SECTION 6 – REACTIVITY INFORMATION

Stability	Stable
Conditions to avoid	Sources of ignition. Static discharges. High temperatures.
Incompatible	May react with strong oxidizing materials.
Hazardous decomposition	Carbon dioxide. Carbon monoxide.

SECTION 7 – HEALTH HAZARD INFORMATION

Route of Entry

- ☐ **Eye**
- ☐ **Skin absorption**
- ☒ **Inhalation**
- ☐ **Ingestion**

Hazardous Contact (with liquid form)

- ☒ **Eye**
- ☒ **Skin Contact**

Acute exposure Contact with liquid will cause freeze injury to eyes or skin. High gas concentrations (% range) can cause asphyxiation by displacing air and thereby reducing the oxygen available for breathing. Symptoms include rapid breathing, fatigue, incoordination, excessive salivation, headache, nausea, vomiting and disorientation. Oxygen concentrations in work spaces must not be permitted to fall below 19%.
Very high concentrations (10,000 ppm) can cause central nervous system (CNS) depression with symptoms such as headache, nausea, dizziness, drowsiness and confusion.

Chronic Not known to cause chronic effects.

Carcinogenicity Not known to cause cancer. Not identified by OSHA as a carcinogen. Not classified by IARC, NTP, NIOSH, ACGIH, or EPA.

Irritancy Does not cause irritation

Mutagenicity Not known to be mutagenic

Sensitization Not known to cause sensitization

Teratogenicity NAv

Reproductive Not known to cause reproductive effects

Toxicologically synergistic products Simple asphyxiants (chemicals that displace air in confined spaces).

SECTION 8 – FIRST AID

Inhalation Move affected person to fresh air or remove source of contamination. Give artificial respiration if breathing has stopped and if a qualified AR administrator is available. Obtain medical attention immediately.

Ingestion Gases do not enter the body by this route.

Eye Flush eye with lukewarm, gently flowing fresh water for at least 15 min. Do not attempt to re-warm. Cover both eyes with sterile dressing. Do not permit affected person to drink alcohol or smoke. Quickly transport affected person to an emergency medical facility.

Skin Briefly flush the affected area with lukewarm, gently flowing water until the chemical is removed. Do not attempt to re-warm the affected area. Do not rub the affected area or apply dry heat. Carefully cut around clothing that sticks to the skin and remove the remainder of the garment. Loosely cover the affected area with a sterile dressing. Do not permit affected person to drink alcohol or smoke. Quickly transport affected person to an emergency medical facility.

SECTION 9 – PRECAUTIONARY MEASURES

Personal Protective Equipment	***Gloves***	Insulated; preferably nitrile or Responder™
	Eye	Chemical safety glasses with face shield for working with the liquid product.
	Respiratory	NIOSH-approved SCBA or air line respirator with escape cylinder for work in confined spaces where oxygen deficiency may occur. A qualified occupational health and safety professional should be consulted for advice on respirator selection.
	Clothing &	Impervious protective clothing for total skin coverage when working with liquid product.
Engineering controls		Enclose product to the greatest extent possible. Use appropriate measures to ensure that oxygen concentrations do not fall below 19%.
Handling procedures & equipment		Eliminate all ignition sources. Use non-sparking equipment, explosion-proof ventilation systems, and intrinsically safe electrical equipment. Bond and ground containers during product transfer. Have clean emergency eyewash and shower readily available in the work area.
Leak & spill procedure		Evacuate area and keep it isolated until all gas has dispersed. Eliminate all sources of ignition. Ventilate area. Stop leak if it can be done safely. Water spray may be used to dissipate gas.

Waste disposal	Consult local authorities. Controlled release to air may be permitted in certain situations.
Storage	Store in a cool, well-ventilated area. Keep away from strong oxidizing materials, excessive heat, and sources of ignition. Use non-sparking equipment, and explosion-proof ventilation systems. Consider leak detection and alarm equipment for storage area.
Shipping	Load at normal temperature (up to 38^{o}C) and pressure. Bond and ground containers for transfer.

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