

Material safety data sheet

The OnGas logo features the word "OnGas" in a white, sans-serif font. The "O" is stylized with a horizontal line through it. The logo is set against a green circular background that overlaps with a red circular background.

Liquefied Petroleum Gas (LPG)

Chemical Name..... Liquefied Petroleum Gas (LPG)
Chemical Formula: Predominantly C₃H₈ Propane and / or C₄H₁₀ Butane
UN Number: LPG 1075, Propane 1978, Butane 1011
H.S.N.O Class: 2.1.1
Hazachem Number: 2YE
IMO/MDG: Class:..... 2.1 Chemical Family Hydrocarbon
IATA Class: 2(d)

Composition

LPG is supplied in various grades to suit the application. The most common grade is 'LPG Mix', being a mixture of normally 60% propane and 40% butane. LPG may also be supplied as straight propane or butane.

LPG contains traces of other hydrocarbons and substances that naturally occur in the LPG. The specification including full composition is available in NZS 5435: 1996 'Liquefied Petroleum Gas'.

Physical Characteristics

As a vapour, LPG is a colourless gas with a 'rotting cabbage' smell like town gas. LPG can also exist as a clear liquid that boils and vapourises rapidly on release. LPG vapour being heavier than air will spread readily along the ground and collect in low lying areas, e.g. drains.

Flammability

High flammable gas that collects at floor level and readily forms an explosive mixture with air. Concentration of 2 to 10% approximately in air can be ignited and the flame will readily spread back to the source of the leak. For handling of LPG, a closed transfer system is required with ventilation at high and low level, explosive or flameproof electrical equipment and lighting, earth connections and no open flames, sparks and no smoking.

		Propane (C ₃ H ₈)	Butane (C ₄ H ₁₀)	Mix (60/40)
Boiling point (atmospheric pressure)	°C	-42	0	N/A
Vapour pressure	0	388	40	292
	10	552	95	424
	30	1004	266 Kpa	796
Specific gravity		0.507	0.580	0.532
Flash point		-105 °C	-60 °C	
Flammability limits		2.2–9.5%	1.5–9%	2–10%
Auto ignition temperature		468	430	450
Vapour density (air=1)		1.58	2.06	1.73

Health Hazard information

	Effects	First aid
Liquid in eyes	Tissue damage due to low temperature, redness, pain, blurred vision.	Do not delay. Flush eye gently with fresh water. Continue washing for at least 15 minutes. Obtain medical aid as soon as possible.
Liquid on skin	Frostbite, tissue damage due to low temperature, redness, pain, blisters, wounds.	Do not delay. Handle patient gently. Remove contaminated clothing. Immerse affected area in cold water. Obtain medical aid as soon as possible.
Vapour	Possible tissue damage due to low temperature, asphyxiation, headaches, dizziness, drowsiness	Remove victim to fresh air. If breathing has stopped or irregular apply artificial respiration.
Toxicity	LPG is not toxic but is unpleasant and may cause nausea if ingested in large quantities.	Remove victim to fresh air.

Precautions for use

Exposure Limits	Workplace Exposure Standard, DOL 1992 Simple asphyxiant TWA 800ppm, 1900mg/m ³
Odour Threshold	LPG is odourised with ethyl mercaptan to assist in detection, and is readily detectable at below 20% of LEL by a 'rotting cabbage' odour.
Personal Protection	Thermal insulated gloves, goggles and full body cover against accidental release of pressurised liquid or gas while handling liquid LPG.

Safe handling information

Storage and Transport	Details contained in the 2.1.1 Controls under Hazardous Substances and New Organisms Act 1996, NZS 5433 1999 Code of Practice for the Transport of Hazardous Substances on Land, and AS/NZS 1596 Storage and Handling of LPG as a practical guide only. Keep containers in an upright position, keep away from heat sources, and keep valves closed when not in use.
Leak Detection	Liquid LPG leaks often cause a visible vapour cloud to form, as the cold liquid condenses water vapour in the air. All LPG leaks can be detected by application of a soap and water solution, with bubbles forming where leaks are present. Leaks are easily detected by odour, and can be seen in still conditions as a shimmer in the air.
Disposal	Do not move damaged cylinders until made safe. Empty contents by decant into alternative cylinder or tank. Vapour may be vented under controlled conditions, or disposed by controlled burning.

LPG spills and emergencies

Spills	Fire Explosion Hazard
For all emergencies	No smoking or naked lights within 50 meters. Move people from immediate area, keep upwind. Contact fire service.
Spill or leaks, no fire	Carry out action "for all emergencies". Stop flow of gas/liquid if possible. Spray water to disperse gas cloud but avoid spraying water directly on leaking container as this may increase leakage. Prevent spillage from spreading or entering underground drains by blocking with sand and earth.
Fire	Carry out action "for all emergencies". Shut off supply of gas rather than put out fire. If available, spray water on containers to keep cool. Dry chemical, BCF extinguishers can be used.