Safety Data Sheet (SDS)

1. Identification of the material and supplier	
Product name	Liquefied Petroleum Gas (LPG)
Product use	Residential and Commercial fuel
Supplier	On Gas Limited 101 Carlton Gore Road Newmarket Auckland 1023 Phone 0800 84 12 12
EMERGENCY NUMBERS	**FIRE SERVICE: 111**
	OnGas: 0800 84 12 12 (24 Hour number) **0800 123 427**

2. Hazards identification	
UN Number	LPG 1075 Propane 1978 Butane 1011
HSNO Class	2.1.1A
Hazchem Number	2YE
IMO/MDG: Class	2.1 Chemical family hydrocarbon
IATA Class	2(d)
GHS Category	Flammable Gas Category 1
Signal Word	Danger
Hazard Statement	Extremely flammable gas
Precautionary Statement	Keep away from heat / open flames. No Smoking. Leaking gas fire: Do not extinguish, unless leak can be safely stopped. Eliminate all ignition sources if safe to do so. Store in well ventilated place.
Health hazards	LPG acts as a simple asphyxiant and a central nervous system depressant. It can affect the body if it is inhaled or if it comes into contact with the eyes or skin. Over exposure to LPG can cause light headedness and drowsiness. Greater exposure may also cause unconsciousness. Contact with liquid may also cause frostbite as well as skin irritation.
Effects and symptoms:	
• Eye contact	Tissue damage due to low temperature, redness, pain, blurred vision.
• Skin contact	Frostbite, tissue damage due to low temperature, redness, pain, blisters, wounds.
• Inhalation	Possible tissue damage due to low temperature, asphyxiation, headaches, dizziness, drowsiness.
• Ingestion	LPG is not toxic but is unpleasant and may cause nausea if ingested in large quantities.

3. Composition/information on ingredients			
Product	**Ingredient**	**CAS No.**	**Concentration**
	LPG	68476-85-7	100%
Composition	Propane	74-98-6	50 – 100%
	Butane	106-97-8	0 – 30%
	Isobutane	75-28-5	0 – 30%
	Ethane	74-84-0	5%
	Pentane	109-66-0	<2%
	Ethyl Mercaptan (odorant)	75-08-1	<0.02%
Information	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. Composition is in accordance with NZS 5435: 1996 'Liquefied Petroleum Gas'.		

4. First-aid measures	
Eye contact	Do not delay. Flush eye gently with fresh water. Continue washing for at least 15 minutes. Obtain medical aid as soon as possible.
Skin contact	Do not delay. Handle patient gently. Remove contaminated clothing. Immerse affected area in cold water. Obtain medical aid as soon as possible.
Inhalation	Remove victim to fresh air. If breathing has stopped or irregular apply artificial respiration. Give oxygen. Seek medical attention immediately.
Ingestion	Remove victim to fresh air. Seek medical attention immediately.

5. Fire-fighting measures	
Flammability	Highly 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.
Fire explosion/ hazard	Evacuate area. Remove ignition sources. Cut off gas supply if safe to do so – Do NOT endanger life. Do NOT extinguish fire – allow gas to burn out. Use water to cool cylinders and vessels exposed to fire. Spray onto upper surface.
Extinguishing	If safe, stop the flow of gas by closing valves or by activating Emergency Shutdown Systems. If the gas source cannot be isolated, do not extinguish the flame as re-ignition and explosion could occur. Await arrival of emergency services. Cool cylinders or vessels with water spray. If it is absolutely necessary to extinguish the flame, use only a dry chemical powder extinguisher. Do not move cylinders for at least 24 hours. Avoid shock and bumps to cylinders. Evacuate the area of persons not fighting the fire. Carbon oxides (CO, CO2) fumes may be produced should burning occur especially within an enclosed space (i.e. causing a deficiency of oxygen).
Fire fighter protection	Fire fighters should wear full protective clothing and may need self-contained breathing apparatus. Be aware of the risk of possible explosion (especially in a confined space).

6. Accidental release measures	
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, with **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.
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 or BCF extinguishers can be used.

7. Handling and storage	
Ignition sources	Use only intrinsically safe equipment and non-sparking tools. Usage: All cylinders should be used in the upright position (with the exception of forklift cylinders) and are approved for use in New Zealand. Installations must be in accordance with AS/NZS 1596: 2014, Health and Safety at Work (Hazardous Substances) Regulations 2017, and any relevant LPGA Codes of Practice.
Handling	Details contained in the 2.1.1A Controls under Hazardous Substances and New Organisms Act 1996, NZS 5433: 2012 Transport of Dangerous Goods on Land, and Health and Safety at Work (Hazardous Substances) Regulations 2017, Code of Practice for the Transport of Hazardous Substances on Land, and AS/NZS 1596: 2014 Storage and Handling of LPG. Keep containers in an upright position, keep away from heat sources, and keep valves closed when not in use.
Storage	Store in well ventilated areas away from heat and sources of ignition. Cylinders and vessels must be correctly labelled. Do not remove warning labels. LPG cylinders shall be stored in accordance with the requirements of Health and Safety at Work (Hazardous Substances) Regulations 2017, AS/NZS 1596: 2014, and any relevant LPGA Codes of Practice. Do not store in basements where vapour may collect. Store cylinders securely in an upright position and keep valves closed.
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. Disposal of cylinders shall be in accordance with EPA Hazardous Substances (Disposal) Notice 2017.

8. Exposure controls / personal protection	
Exposure limits	Workplace Exposure Standards and Biological Exposure Indices 2018, Health and Safety at Work Act 2015 (HSWA) and Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 Simple asphyxiant Butane: TWA 800ppm, 1900mg/m^3 LPG: TWA 1000ppm, 1800mg/m^3 Propane: Simple asphyxiant – may present an explosion hazard
Personal protective equipment	Wear thermal insulated gloves and full body cover to prevent cold burns and frostbite. In filling operations wear protective clothing including gloves, safety goggles or face shield. All clothing should be anti-static, low flame type. When handling cylinders wear protective footwear.

9. Physical and chemical properties				
		Propane (C3H8)	**Butane (C4H10)**	**Mix (60/40)**
Appearance	Colourless gas with an unpleasant odour			
Odour	Odourised with Ethyl Mercaptan – strong odour like rotten eggs or cabbage.			
Odour threshold	N/A			
pH		N/A	N/A	N/A
Melting point / freezing point		-189.7˚C	-138.4˚C	N/A
Boiling point (atmospheric pressure)		-42˚C	0.5˚C	N/A
Flash point		-105˚C	-60˚C	-81˚C
Flammability	Highly flammable			
Upper / lower flammability or explosive limits		2.2 – 9.5%	1.5 – 9.0%	2.0 – 10%
Vapour pressure at	0˚C	388 kPa	40 kPa	292 kPa
	10˚C	552 kPa	95 kPa	424 kPa
	30˚C	1004 kPa	266 kPa	796 kPa
Vapour density (air=1)		1.58	2.06	1.73
Specific gravity		0.508	0.573	0.537
Solubility (ies)		Slightly	Immiscible	Immiscible
Partition coefficient: n-octanol/water		N/A	N/A	N/A
Auto ignition temperature		468˚C	430˚C	450˚C
Decomposition temperature		N/A	N/A	N/A
Kinematic viscosity		N/A	N/A	N/A

10. Stability and reactivity	
Stability	The product is stable.
Reactivity	Incompatible with strong oxidizing agents like nitric acid.

11. Toxicological information	
Eye	Liquid in eyes will cause tissue damage. Vapour may cause irritation.
Inhalation	May cause headaches, drowsiness and dizziness. Excessive exposure may cause unconsciousness or even death, due to asphyxiation (refers to vapour not liquid).
Skin	Liquid may cause frostbite, tissue damage, blisters and wounds.
Ingestion	Due to product form, ingestion is considered highly unlikely.

12. Ecological information			
LPG will vaporise rapidly when released to atmosphere. There are no known adverse ecological effects.			
Toxicity	LPG is not known to be toxic to aquatic or terrestrial organisms.		
Persistence and degradability	**Ingredient:** Propane Butane Isobutane Ethane Pentane Ethyl Mercaptan	**Persistence: Water / Soil** Low Low High Low	**Persistence: Air** Low Low High Low
Bioaccumulative potential	**Ingredient:** Propane Butane Isobutane Ethane Pentane Ethyl Mercaptan	**Bioaccumulation** Low (LogKOW = 2.36) Low (LogKOW = 2.89) Low (BCF = 1.97) Low (LogKOW = 1.2673)	
Mobility in soil	**Ingredient:** Propane Butane Isobutane Ethane Pentane Ethyl Mercaptan	**Mobility** Low (KOC = 23.74) Low (KOC = 43.79) Low (KOC = 35.04) Low (KOC = 23.74)	

13. Disposal considerations	
Waste disposal	Cylinders should be returned to the LPG supplier for disposal. Hazard warning labels should not be removed. Do not puncture or incinerate cylinder. Disposal of material must be carried out in accordance with Hazardous Substances (Disposal) Regulations 2001.

14. Transport information	
Transport	Transport of LPG is controlled in accordance with the requirements of NZS 5433: 2012.
Pictogram	
UN number	LPG 1075, Propane 1978, Butane 1011
UN proper shipping name	LIQUEFIED PETROLEUM GAS
HSNO class	2.1.1A
UN dangerous goods class	Class: 2.1 Subrisk: N/A
Hazchem number	2YE
IMDG: Class	2.1 Chemical family hydrocarbon
IATA class	2 (d)

15. Regulatory information	
EPA Approval Numbers	LPG – HSR001009 Butane – HSR000989 Propane – HSR001010
HSNO Group Standard	LPG Liquefied Petroleum Gas

16. Other information		
Date of issue	28 November 2018	
Date of last review	28 November 2018	
Version no.	2	
Acronyms	BCF	Bioconcentration factor
	CAS	Chemical Abstract Service
	EPA	Environmental Protection Authority
	GHS	Globally Harmonized System
	HSNO	Hazardous Substances and New Organisms
	IATA	International Air Transport Association
	IMDG	International Maritime Dangerous Goods
	KOC	Adsorption coefficient
	LogKOW	Octanol-water partition coefficient
	TWA	Time-weighted average
Standards	AS/NZ 1596	The Storage and Handling of LPG
	NZ 5433	Transport of Dangerous Goods on Land
	NZS 5435	Specification for Liquefied Petroleum Gas (LPG)