

Safety Data Sheet

1. Identification		
Product Identifier:	Natural Gas Liquids	
Other Means of Identification:	NGL, L.P.G. (Liquefied Petroleum Gas)	
Product use:	Heating and cooking fuel, gasoline blending, feedstock for production of petrochemicals	
Restrictions on use:	Do not use for purposes other than those listed above	
Manufacturer:	Keyera and Affiliates	
Address:	Suite 200, The Ampersand, West Tower 144 – 4 th Avenue SW Calgary, AB, T2P 3N4	
Main Phone Number: Transportation Emergencies On	(403) 205-8300 / 1 (888) 699-4853 (Mon Fri. 8 AM - 5 y: CANUTEC (CAN) Ph:1-888-CAN-UTEC(226-8832) Cell*	

CHEMTREC (US) Ph: 1-800-424-9300 (24 hr)

2. Hazards Identification

GHS Hazards

Pictogram	Classification	Hazard Statements	
	Flammable Gases – Category 1	Extremely flammable gas.	
\diamond	Gases Under Pressure – Liquefied Gas	Contains gas under pressure; may explode if heated.	
()	Specific Target Organ Toxicity, Single Exposure – Category 3	May cause drowsiness or dizziness.	
Ť	Skin corrosion/irritation – Category 2	Causes skin irritation.	
	Eye damage/irritation – Category 2A	Causes serious eye irritation.	
	Specific Target Organ Toxicity, Single Exposure – Category 2	May cause damage to heart.	
	Carcinogenicity – Category 1A	May cause cancer	
	Toxic to reproduction – Category 1A	May damage fertility or the unborn child.	
No pictogram	Simple Asphyxiant	May displace oxygen and cause rapid suffocation.	



Signal Word: Danger

Precautionary Statements:

Prevention

- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources No smoking.
- Do not breathe gas.
- Wash hands thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.

Response

- Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- In case of leakage, eliminate all ignition sources.
- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- Get medical advice/attention if you feel unwell.
- If on skin: Wash with plenty of water.
- Take off contaminated clothing and wash it before reuse.
- If skin irritation occurs: Get medical advice/attention.
- If exposed or concerned: Call a physician/doctor.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

Storage

- Store in a well-ventilated place.
- Protect from sunlight.
- Keep container tightly closed.
- Store locked up.

Disposal

• Dispose of contents/container in accordance with applicable local, provincial/state, and federal regulations.





3. Composition/Information on Ingredients

Chemical Name:
Common Name/Synonyms:

Natural Gas Liquid NGL, L.P.G. (Liquefied Petroleum Gas)

Ingredient Name	Volume %	CAS No.
Methane	Trace (0 – 1.0)	74-82-8,
Ethane	0 - 30	74-84-0
Propane	2 - 65	74-98-6
iso-Butane	2 – 20	75-28-5
n-Butane	10 – 30	106-97-8
iso-Pentane	1 – 15	78-78-4
n-Pentane	1 – 20	109-66-0
Hexanes	0 – 10	
Heptanes Plus (C7 +)	0 – 10	
Benzene	0 – 0.2	71-43-2
Toluene	0 - 0.2	108-88-3
Xylene (mixed isomers)	trace	1330-20-7

4. First Aid Measures

Immediate Medical Attention and Special Treatment:

Treat symptomatically and supportively. Refer also to Table below.

First Aid:	
Inhalation :	Remove person to fresh air and keep comfortable for breathing. If exposed or concerned: Call a doctor/physician.
Skin:	Take off immediately all contaminated clothing. Wash skin with plenty of water. If skin irritation occurs: get medical advice/attention.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.
Ingestion:	Not expected to be a route of exposure.

Most Important Effects and Symptoms, Acute or Delayed:

Benzene may cause cancer (leukemia) through skin exposure; Toluene may cause damage to fertility and the unborn child.

Exposure Route	Health Effects	Symptoms of Exposure
Inhalation:	NGL may act as an asphyxiant by displacing oxygen in the ambient air, causing suffocation.	Loss of consciousness, death.
Skin:	May cause irritation; contact with liquefied gas may cause burn or frostbite. See also exposure (skin) to benzene being carcinogen	numbness, cold, burning sensation, white, pale, greyish- yellow or red skin, blistering in severe cases.
Eyes:	May cause irritation; contact with liquefied gas may cause burn or eye damage.	numbness, cold or burning sensation, blistering to blindness in severe cases.



5. Fire Fighting Measures

Flammability: Yes	Hazardous Combustion Products: Carbon monoxide (CO), carbon dioxide (CO ₂), and acrid smoke.			
Explosion:	Sensitive to static discharge:			
Sensitive to impact: No	Yes			
Extinguishing Media:				
Small Fire: dry chemical or CO_2 .				
Large Fire: water spray or fog.				
Unsuitable Extinguishing Media:				
• Foam.				
Water jet: Do not direct water at source of le	eak, especially with NGL to avoid icing.			
Special Protective Equipment for Firefighter				
 Wear full protective clothing and NIOSH-ap full face-piece. 	proved self-contained breathing apparatus with			
Wear thermal protective clothing when the t	ire involves liquefied gas.			
Precautions for Firefighters:				
 DO NOT EXTINIGUISH A LEAKING GAS FIRE UNLESS THE LEAK CAN BE STOPPED. If tank, rail car or tank truck is involved in a fire, ISOLATE and consider initial evacuation in <u>all directions</u> for 1600 meters (1 mile). 				
 Move container from fire area if you can do Apply cooling water to sides of containers of 				
 Apply cooling water to sides of containers exposed to flames until well after fire is out. Cool fire-exposed containers with flooding quantities of water applied from as far a distance as possible. 				
Stay away from ends of tanks.				
Containers exposed to fire may explode or vent through pressure-relief devices.				
 Refer to Guide 115 of the Emergency Response Guidebook (Transport Canada/US Dept. of Transportation). 				
Unusual Fire and Explosion Hazards:				
• The highly flammable vapors are heavier than air and may accumulate in low areas and /or spread along ground to distant ignition sources and flash back.				
 The product is not soluble in (and floats on top of) water. Using water as an extinguishment may spread the fire rapidly. 				





6. Accidental Release Measures				
Protective Equipment:				
Gloves: Recommended: neoprene and nitrile; insulating gloves (for liqued				
	Not recommended: polyvinyl chloride PVC.			
Clothing:	Flame-retardant coverall e.g. Nomex, Proban. Protective apron and			
	trousers worn over coveralls for handling NGL.			
Respirator:	NIOSH Approved Supplied-Air Respirator or SCBA where large			
	quantities are released, and the exposure level is unknown or where an			
Бург	oxygen-deficient atmosphere may exist.			
Eye:	Safety glasses with side shields, safety goggles or face shields.			
Precautions:				
	f water to liquefied gas will cause flash vaporization resulting in an explosion			
	ely or delayed) known as a "boiling liquid, expanding vapor explosion			
(BLEVE)".				
Do not breathe v	1			
	led liquefied NGL with bare skin to avoid frostbite/freeze burn.			
	y flammable: must be kept from sparks, open flame, hot surfaces, and all			
sources of ignitio				
	hable vapors are heavier than air and may accumulate in low areas and /or bund to distant ignition sources and flash back.			
	<u> </u>			
Emergency Proced				
	ease source, if it can be done safely.			
Remove all source	5			
 Isolate hazard ar 				
	f all unnecessary personnel.			
Small spill: will e				
	ider <u>downwind</u> evacuation of at least 800 meters (½ mile.) ⁻ tank truck is involved in a fire, ISOLATE and consider initial evacuation in			
	1600 meters (1 mile).			
	ry and unprotected personnel from entering.			
• • •	 Emergency personnel must wear appropriate personal protective equipment. Ventilate area of look or apill 			
	Ventilate area of leak or spill.If possible, turn leaking NGL containers so that gas escapes instead of liquid.			
Containment and C	-			
	g tools and equipment.			
(e.g., vermiculite, dry sand, earth), and place in metal container which can be grounded.				
cloud draft. Do r	 If a leak or spill has not ignited, use water spray to disperse the vapors or divert vapor cloud draft. Do not direct water at spill or source of leak. 			
Prevent vapors of	or NGL from spreading to sewers, ventilation systems, confined spaces.			
 Dispose of content federal regulation 				
-	15 of the Emergency Response Guidebook (Transport Canada/US Dept.			



7. Handling and Storage

Handling Precautions :

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use only outdoors or in a well-ventilated area.
- Keep away from heat/sparks/open flames/hot surfaces No smoking.
- Do not breathe vapors.
- Do not eat, drink or smoke when using this product.
- Use non-sparking tools and equipment.
- Ground/bond containers when transferring NGL Take measures against static discharges.
- Wear protective gloves/ protective clothing/ eye protection/ face protection when handling liquefied propane.

Storage Precautions:

Locations

- Store in a cool, dry, well-ventilated location, away from any area of fire-hazard.
- Outside or detached storage is preferred.
- Storage and use areas should be No Smoking areas.
- Store locked-up.

Containers

- Keep container tightly closed.
- Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death

Other precautions

• Separate from incompatibles like oxidizers e.g. chlorine gas and oxygen.





8. Exposure Controls / Personal Protection

EXPOSURE LIMITS

	Authority	15 MINS STEL or Ceiling	8-HOURS
Ethane	ACGIH TLV	Refer to "Minimal Oxygen Content	" Appendix F of ACGIH*
(CAS 74-84-0)	Alberta, Ontario, BC	-	1000 ppm
Propane (CAS 74-98-6)	ACGIH: Identified as an asphyxiant Because L.P.G. may cause asphyxia at concentrations well above the lower explosive limit (LEL), the revised IDLH for L.P.G. is 2,000 ppm based strictly on safety considerations (i.e., being about 10% of the LELs of 1.9% for butane and 2.1% for propane).		
	Alberta, Ontario, BC	-	1000 ppm
Butane	Alberta	-	1000 ppm (2370 mg/m ³)
(all isomers)	Ontario	-	800 ppm (1900 mg/m ³)
	BC	750 ppm (1778 mg/m ³)	600 ppm (1422 mg/m ³)
Pentane	Alberta, Ontario	-	600 ppm (1770 mg/m ³)
(all isomers)	BC	-	600 ppm
n-Hexane	Alberta	-	50 ppm (176 mg/m ³)
(CAS 110-54-3)	BC	-	20 ppm (skin)
	Ontario	-	50 ppm (skin)
Hexane	Alberta	1000 ppm (3500 mg/m ³)	500 ppm (1760 mg/m ³)
(All isomers	BC	-	200 ppm
except n-hexane)	Ontario	1000 ppm	500 ppm
Heptane	Alberta	500 ppm (2050 mg/m ³)	400 ppm (1640 mg/m ³)
(All isomers)	BC, Ontario	500 ppm	400 ppm

Benzene	Alberta	2.5 ppm (1.6 mg/m ³) – skin	0.5 ppm (8 mg/m ³) – skin
(CAS 71-43-2)	Ontario, BC	2.5 ppm – skin	0.5 ppm – skin
Toluene	Alberta	-	50 ppm (188 mg/m ³)
(CAS 1-8-88-3)	Ontario, BC	-	20 ppm

ENGINEERING CONTROLS



- Ventilate area where product is used, stored and/or handled to maintain airborne concentrations below the LEL and OEL, especially in confined spaces.
- Exhaust/ventilate to the outside.
- Ventilation equipment must be explosion proof.
- Ventilation system should be grounded and separate from other exhaust ventilation systems. Adequate make-up air must be provided.

PERSONAL PROTECTIVE EQUIPMENT

Recommended: neoprene and nitrile;
Not recommended: polyvinyl chloride PVC.
Use insulating gloves when handling NGL
Flame-retardant coverall e.g. Nomex, Proban. Protective apron and trousers
worn over coveralls for handling liquefied propane.
NIOSH Approved Supplied-Air Respirator or SCBA where large concentration
is anticipated, and the exposure level is unknown or where an oxygen-
deficient atmosphere may exist.
Safety glasses with side shields, safety goggles or face shields.

Issue Date: August 17, 2021





9. Physical and Chemical Properties			
Chemical Formula: C_3 to C_5 hydrocarbons	Molecular Weight: Not available	Chemical Family: Hydrocarbon	
Appearance: Colorless gas	Odor: Slight gasoline odor	Odor Threshold: Not available	
pH: Not applicable	Melting/Freezing Point: Not available	Boiling Point: Approx1 to 1°C (30- 34°F)	
Boiling Range: Not available	Vapor Density: Not available	Specific Gravity: 0.480-0.590	
Flash Point:<-35°C (-31°F)	Flammability: Yes	Evaporation Rate: >1 (Butyl Acetate = 1)	
Upper-Lower Explosive Limit: 2.1% (LEL), 10.0% (UEL)	Reid's Vapor Pressure: ~ 750-1000 kPa	Percent Volatile: 100 by volume	
Soluble in water (@20°C): Slightly soluble	Others: Soluble in organic solvents such as alcohol, ether, chloroform		
Partition Coefficient n-octanol/water: Not available	Auto-Ignition Temperature: Not available	Decomposition Temp.: Not available	
Viscosity: Not available	Henry's Law Constant: Not available	Isobaric Heat Capacity: Not available	

10. Stability and Reactivity

Reactivity:

Avoid incompatible materials: may react violently with oxidizers.

Chemical Stability:

Stable under normal temperatures and pressures.

Possibility of Hazardous Reactions:

Polymerization has not been reported to occur under normal temperature and pressure conditions.

Conditions to Avoid:

Extreme temperatures and incompatible materials.

Incompatible Materials:

• Oxidizers: may react violently with oxidizers including chlorine gas and oxygen.

Hazardous Decomposition Products:

- No decomposition if stored and applied as directed.
- Combustion forms carbon monoxide, carbon dioxide, irritating and toxic fumes/gases.





	11. Toxicological Information					
Exposure Route	Acute Health Effects	Symptoms of Exposure				
Inhalation:	Effects on the Central Nervous system (CNS) may range from mild (respiratory depression) to severe effects (asphyxiation)	may range from rapid breathing, dizziness to respiratory arrest, loss of consciousness (narcosis) and death in extreme cases.				
Skin:	In gas form: irritation. In liquid form: burn or frostbite.	- numbness, cold or burning sensation, white, pale, greyish-yellow or red skin, blistering in severe cases.				
Eye:	In gas form: irritation. In liquid form: burn or frostbite.	- numbness, cold or burning sensation, blistering to blindness in severe cases.				
Ingestion:	Not expected to be a route of exposure.					

Chronic Exposure:

Inhalation:

Repeated or prolonged exposure <u>may</u> cause damage to the central nervous system (CNS), and the nervous system. Toluene in the NGL is listed as a reproductive toxin.

Skin:

Not known to be a skin-sensitizer. Repeated and prolonged contact may cause dry, red,

cracked skin (dermatitis). Benzene may cause cancer (leukemia).

Medical Conditions Aggravated by Exposure:

Possibly asthma.

Sensitization:		ve Toxicology:	Teratogenicity:	Mutagenicity:	Irritancy:
No		component)	No	No	Yes
Carcinogenicity: Yes (benzene component)		v 1	:: e: central nervous s sure: no data availa		art.

Lethality Tests:

Chemical Name	CAS No.	LD50	LC50
Ethane	74-84-0	Not available	Rat, inhalation: 658 mg/L 4 hrs.
Propane	74-98-6	Not available	Rat, inhalation: 658 mg/L 4 hrs. Rat, inhalation: >800000ppm, 15-mins (oxygen was also added to maintain a level of ~20vol%)
Isobutane	75-28-5	Not available	Rat, inhalation: 658 mg/L 4 hrs. Rat, inhalation: 570,000 ppm/15 mines Mouse, inhalation: 52 mg/L/1 hr.
n-Butane	106-97-8	Not available	Rat, inhalation: 658 mg/L 4hr Mouse, inhalation: 680 mg/L/2 hr.
iso-Pentane	78-78-4	Not available	Rat, inhalation: 280 g/m ³ 4hr
n-Pentane	109-66-0	Rabbit, dermal: 3000 mg/kg Mouse, oral: 5000 mg/kg	Rat, inhalation: 364 mg/L 4hr



Lethality Tests (continued):

Chemical Name	CAS No.	LD50	LC50
Hexane	110-54-3	Adult rats 29700 mg/kg	Rat & Mice, inhalation: 48000 ppm/4 hr.
Heptane	142-82-5	Mouse, iv 222 mg/kg	Rat inhalation 103 g/cu m/4 hr.
Benzene	71-43-2	Rabbit, dermal:>8200 mg/kg Rat, oral: 810 mg/kg	Rat, inhalation: 44.66 mg/L 4 hr.
Toluene	108-88-3	Rabbit, dermal: 12000 mg/kg Rat, oral: 2600 mg/kg	Rat, inhalation: 12.5 mg/L 4 hrs.

12. Ecological Information				
Persistence & Degradability:	Bioaccumulative Potential:			
Not expected to persist in the environment.	No.			
Mobility:	Other Adverse Effects:			
No data available.	See below.			

Terrestrial Fate:

- Photolysis and hydrolysis are not expected to be important in soil.
- Not expected to bioaccumulate.
- The lighter, volatile components will evaporate leaving heavier components to undergo slow biodegradation in the soil.
- Spills may contaminate groundwater depending on the level of groundwater table and local geology.

Aquatic Fate:

- Spills will spread on the water surface and the majority from C2-C5 will evaporate. The heavier components C6, C7+ being only slightly soluble in water and with specific gravity <1, will remain/float on the water surface.
- Hydrolysis is not expected to be an important environmental fate process since the alkanes lack functional groups that hydrolyze under environmental conditions.

Atmospheric Fate:

- If released to air, ethane, propane, butanes (n-butane and isobutane) will exist solely as gas in the atmosphere.
- The Volatile Organic Compound (VOC) components such as ethane, propane, butanes, pentanes have the potential to partake in photochemical reactions to produce ozone pollutant.



Eco Toxicity Tests:

Chemical Name	CAS No.		
n-Pentane	109-66-0	Fish Invertebrate	Oncorhynchus mykiss LC50: 9.87 mg/L 96 hr. Pimephales promelas LC50: 11.59 mg/L 96 hrs. Lepomis macrochirus LC50: 9.99 mh/L 96 hrs. Daphnia magna EC50: 9.74 mg/L 48 hrs.
iso- Pentane	78-78-4	Invertebrate	Daphnia magna EC50: 2.3 mg/L 48 hrs.
Benzene	71-43-2	Fish	Oncorhynchus mykiss LC50: 5.3 mg/L 96 hr. flow- through Pimephales promelas LC50: 10.7-14.7 mg/L 96 hrs. flow-through Lepomis macrochirus LC50: 22.4 mg/L 96 hrs. static Lepomis macrochirus LC50: 70000-142000 ug/L 96 hrs. static Precilla reticulata LC50: 28.6 mg/L 96 hrs. static Pseudokirchneriella subcapitata EC50: 29 mg/L 72 hrs.
		Invertebrate	Daphnia magna EC50: 8.76-15.6 mg/L 48 hrs. static Daphnia magna EC50: 10 mg/L 48 hrs.
Toluene	108-88-3	Fish	Oncorhynchus mykiss LC50: 5.89-7.81 mg/L 96 hr. flow-through Oncorhynchus mykiss LC50: 14.1-17.16 mg/L 96 hr. static Oncorhynchus mykiss LC50: 5.8 mg/L 96 hr. semi-static Pimephales promelas LC50: 15.22-19.05 mg/L 96 hrs. flow-through (1 day old) Pimephales promelas LC50: 12.6 mg/L 96 hrs. static Lepomis macrochirus LC50: 11.0-15.0 mg/L 96 hrs. static Oryzias latipes LC50: 54 mg/L 96 hrs. static Precilla reticulata LC50: 28.2 mg/L 96 hrs. semi-static Precilla reticulata LC50: 50.87-70.34 mg/L 96 hrs. static
		Algae	Pseudokirchneriella subcapitata EC50: >433 mg/L 72 hrs. Pseudokirchneriella subcapitata EC50: 12.5 mg/L 72 hrs. static
		Invertebrate	Daphnia magna EC50: 5.46-9.83 mg/L 48 hrs. static Daphnia magna EC50: 11.5 mg/L 48 hrs.



13. Disposal Considerations

Waste Disposal:

- Dispose of waste material at an approved waste treatment/disposal facility in accordance with • applicable local, provincial, and federal regulations.
- Excess/waste NGL can be disposed by incineration in a waste gas incinerator or flare.
- NGL can also be reused as fuel for boilers and heaters.

14. Transport Information

TDG (CANADA) CLASSIFICATION

PROPER SHIPPING NAME: Liquefied Petroleum Gas **CLASS: 2.1** PACKING GROUP: None

UN NUMBER: UN1075 LABEL/PLACARD:



If the main components are C3 and C4

OR

PROPER SHIPPING NAME: Hydrocarbon Gas Mixture, Liquefied, N.O.S. **CLASS:** 2.1 PACKING GROUP: None

UN NUMBER: UN1965 LABEL/PLACARD:



SP 16: The technical name of at least one of the most dangerous substances that predominately contributes to the hazard(s) posed by the dangerous goods must be shown in parenthesis

MARINE POLLUTANT: No

15. Regulatory Information

CANADA

	Methane	Ethane	Propane	iButane	nButane	iPentane	nPentane	nHexane
CAS	74-82-8	74-84-0	74-98-6	75-28-5	106-97-8	78-78-4	109-66-0	110-54-3
DSL	yes	yes	yes	yes	yes	yes	yes	yes
NPRI	no	no	yes	no	no	no	no	yes
E2	yes	yes	yes	yes	yes	yes	yes	no

	Benzene	Toluene	Xylene
			isomers
CAS	71-43-2	108-88-3	1330-20-7
DSL	yes	yes	yes
NPRI	yes	yes	yes
E2	yes	yes	yes

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16. Other Information

NFPA Hazard Rating: Health 2, Flammability 4, Instability 0

Prepared for:

Issue Date/ Revision No:

240

Keyera Health and Safety August 17, 2021/ Revision #4

Revisions: • Original:	Dates: January 3, 2011	Main Changes:
 1st revision: 	February 28, 2014	Reformat
 2nd revision: 	June 30, 2015	Canada GHS format
 3rd revision 	August 31, 2015	Changed emergency contact number
 4th revision 	August 17, 2021	Update phone number and addresses

Glossary

ACGIH – American Conference of Governmental Industrial Hygiene **DOT** – US Department of Transportation DSL - Domestic Substance List (Canada) E2 – Environmental Emergencies (Canada) **GHS** – Globally Harmonized System IARC - International Agency for Research on Cancer **IDLH** – Immediately Dangerous to Life and Health NIOSH - National Institute for Occupational Safety & Health NPRI - National Pollutant Release Inventory (Canada) NTP - National Toxicology Program OSHA - Occupational Safety & Health Administration of the US Depart of Labour PEL - Permissible Exposure Limit SARA - Superfund Amendments and Reauthorization Act of 1986 STEL - Short Term Exposure Limit **TRI** – US Toxic Release Inventory **TSCA** – Toxic Substance Control Act

TWA – Time Weighed Average

Disclaimer of Expressed and Implied Warranties

The information presented in the Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. However, neither Keyera nor its affiliates assumes any liability whatsoever for the accuracy or completeness of the information contained herein. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use.

~ End of Safety Data Sheet ~