


**1. Product and Company Identification**

Product Name:	Natural Gas Liquids
Synonyms:	NGLs, Y-grade, C2+
UN Number:	1965
Recommended Use:	Feedstock, Fuel
Supplier Address:	Dominion Energy Questar Pipeline 333 South State Street P.O. Box 45433 Salt Lake City, UT 84145-0433 801-324-5111
Chemical Emergency Phone No.:	801-324-5111

**2. Hazards Identification**

<p><b>EMERGENCY OVERVIEW</b></p> <p><b>DANGER!</b></p> <p><b>EXTREMELY FLAMMABLE LIQUID AND VAPOR – MAY CAUSE FLASH FIRE OR EXPLOSION</b></p> <p><b>CONTAINS BENZENE – A KNOWN HUMAN CARCINOGEN</b></p> <p><b>MAY BE HARMFUL OR FATAL IF INHALED, SWALLOWED OR ABSORBED THROUGH THE SKIN – MAY BE ASPIRATED INTO THE LUNGS IF SWALLOWED</b></p> <p><b>MAY CAUSE EYE AND SKIN IRRITATION</b></p>	
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**Health Hazard Classification:**

Carcinogenicity – Category 1A  
 Reproductive Toxicity – Category 2  
 Acute Toxicity (inhalation) – Category 1  
 Acute Toxicity (oral) – Category 2  
 Skin Irritation – Category 2  
 Aspiration – Category 1

**Physical Hazard Classification:**

Flammable Liquids – Category 1

**Potential Health Effects:**

Primary Route of Exposure:	Inhalation, skin contact
Inhalation:	Irritating to the eyes, nose and throat and narcotic at high concentrations. May act as a simple asphyxiant. Inhalation of high concentration can cause dizziness, headache, difficulty breathing and loss of consciousness. Inhalation of the concentrated vapor may cause pulmonary edema.
Eye Contact:	Contact with the eyes may cause irritation. Contact with cold gas may cause frostbite.

Skin Contact:	May cause irritation, reddening and blistering with prolonged exposure. May be absorbed through the skin. Contact with cold gas may cause frostbite.
Ingestion:	Moderately toxic by ingestion, may cause depression, headache, nausea, vomiting and swelling of the abdomen. May cause pulmonary edema or pneumonitis upon aspiration.
Chronic Effects:	Long term misuse may cause motor neuropathy and cardiac arrhythmia. Contains benzene, a human carcinogen (IARC Group 1). Prolonged exposure to benzene is associated with aplastic anemia and myeloid leukemia.
Aggravated Medical Conditions:	Respiratory disorders; blood chemistry disorders; skin disorders.

### 3. Composition/Information on Ingredients

Natural gas liquid is a complex mixture of volatile hydrocarbons, the composition of which varies depending upon the source and processing method of natural gas. Typically, the hydrocarbons range from C3 to C10, with aromatic compounds including benzene, toluene and xylenes.

CHEMICAL	CAS NO.	VOLUME %
Natural Gas Condensate	68919-39-1	100
Methane	74-82-8	0 – 2.5
Ethane	74-84-0	4.5 - 10
Propane	74-98-6	16 - 25
Butanes ( <i>n</i> -, & <i>iso</i> -)	106-97-8; 78-28-5	22 - 38
Pentanes ( <i>n</i> -, & <i>iso</i> -)	109-66-0; 78-78-4	17 - 28
<i>n</i> -Hexane	110-54-3	2.5 - 4
Hexane isomers	Mixture	4.5 - 8
Heptane isomers	Mixture	5.5 - 10
Octane isomers	Mixture	1 – 3.5
C <sub>9</sub> to C <sub>10</sub> Hydrocarbons	Mixture	0.5 – 2.5
Benzene	71-43-2	0.05 - 2
Toluene	108-88-3	0.05 - 2
Xylenes	1330-20-7	0.05 – 1.5

### 4. First-aid Measures

Inhalation:	If inhaled remove affected person to fresh air, first ensuring your own safety. If experiencing breathing difficulty administer oxygen. If not breathing, administer CPR or artificial respiration. Seek medical attention immediately.
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Ingestion:	If swallowed, DO NOT INDUCE VOMITING. If the victim is conscious, administer water by mouth. Call a physician or poison control center immediately.
Eye Contact:	In the case of eye contact, rinse the eye with plenty of running water for at least 15 minutes. If frostbite conditions, rinse the eye with tepid water. Obtain medical assistance.
Skin Contact:	Remove contaminated clothing, wash skin with plenty of running water. If frostbite conditions, wash skin with tepid water. Obtain medical assistance if irritation persists.

## 5. Fire-fighting Measurements

Flammable Properties:	Flammable liquid
Suitable Extinguishing Media:	Flame can be extinguished with dry chemical, CO <sub>2</sub> or foam.
Explosion Hazards:	Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors may ignite explosively. Liquid may float and ignite on the surface of water.
Hazardous Combustion Products:	Irritating gases of oxides of carbon including carbon dioxide and carbon monoxide.
Special PPE & Precautions for Fire-fighters:	Evacuate the area and fight the fire from a safe distance. Water may be ineffective to extinguish the fire, but should be used to keep surroundings and containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from areas of potential ignition. Divert run-off water away from sewers and waterways. Wear approved respiratory equipment and full protective equipment as indicated for fighting fire.

## 6. Accidental Release Measures

Personal Precautions:	All sparks, flames and sources of ignition must be restricted from the area, ventilate if indoors by opening doors and windows. Evacuate and clear a safe area.
	Wear self-contained breathing apparatus and protective clothing where warranted.
	Review Section 5, Fire-fighting Measures, before proceeding with containment and cleanup procedures.
Environmental Precautions:	Avoid washing, draining, or directing material into sewers and drainage.
Containment and Cleanup:	Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming and return liquid to an appropriate container. Soak up residual liquid by using absorbent materials such as vermiculite, sand or clay and placing in a container along with other contaminated material, soils or debris for ultimate disposal.

**7. Handling and Storage**

**Safe Handling:** Prevent eye and skin contact; do not breathe the mist or vapors. Wash hands after handling. Use in a well-ventilated area. Ground and bond all lines, containers and equipment used with natural gas condensate to prevent static sparks. Do not weld, cut, or grind on containers which have been emptied; flammable vapors and residues may remain.

**Safe Storage:** Store in approved, labeled containers in a ventilated area; ensure containers are tightly closed. Keep containers away from flame, sparks and excessive temperatures. Keep away from incompatible chemicals including strong oxidizers. Comply with all federal, state and local regulatory requirements for handling, storage, transfer and disposal of flammable liquids.

**8. Exposure Controls/Personal Protection**

CHEMICAL	OCCUPATIONAL EXPOSURE LIMIT (OEL) <sup>1</sup>		
	OSHA	ACGIH	NIOSH
Methane	Not applicable	1000 ppm <sup>2</sup>	Not applicable
Ethane	Not applicable	1000 ppm <sup>2</sup>	Not applicable
Propane	1000 ppm	1000 ppm <sup>2</sup>	1000 ppm TWA 2100 ppm IDLH
Butanes ( <i>n</i> -, & <i>iso</i> -)	Not applicable	1000 ppm <sup>3</sup>	800 ppm <sup>4</sup> TWA
Pentanes ( <i>n</i> -, & <i>iso</i> -)	1000 ppm <sup>5</sup>	600 ppm	120 ppm <sup>5</sup> 610 ppm <sup>5</sup> STEL 1500 ppm <sup>5</sup> IDLH
<i>n</i> -Hexane	500 ppm	50 ppm (skin)	50 ppm 1100 ppm IDLH
Hexane isomers		500 ppm 1000 ppm STEL	100 ppm 510 ppm STEL
Octane isomers	500 ppm <sup>6</sup>	400 ppm 500 ppm STEL	85 ppm <sup>6</sup> 440 ppm <sup>6</sup> STEL 750 ppm <sup>6</sup> IDLH
Octane isomers	500 ppm <sup>7</sup>	300 ppm	75 ppm <sup>7</sup> 385 ppm <sup>7</sup> STEL 1000 ppm IDLH
C <sub>9</sub> – C <sub>10</sub> Hydrocarbons		200 ppm <sup>8</sup>	200 ppm <sup>9</sup>
Benzene	1 ppm 5 ppm STEL	0.5 ppm (skin) 2.5 ppm STEL	0.1 ppm 1 ppm STEL 500 ppm IDLH
Toluene	200 ppm 300 ppm C 500 ppm Peak	20 ppm	100 ppm 150 STEL 500 ppm IDLH
Xylenes	100 ppm	100 ppm 150 ppm STEL	100 ppm 150 STEL 900 ppm IDLH

<sup>1</sup>OELs are 8-hour time weighted average exposure levels unless otherwise indicated as IDLH (Immediately Dangerous to Life and Health), STEL (15 minute Short Term Exposure Limit or Ceiling Limit), C (Ceiling Limit) or Peak (maximum ten minute concentration above the Ceiling Limit). Limits with a "skin" notation indicate that the substance can be

absorbed through the skin.

<sup>2</sup>As an aliphatic hydrocarbon gas (C<sub>1</sub> to C<sub>4</sub>)

<sup>3</sup>Applies to *n*-Butane as an aliphatic hydrocarbon gas

<sup>4</sup>A NIOSH REL of 800 ppm as a time weighted average exposure has been established for both butanes listed.

<sup>5</sup>OEL applies to *n*-Pentane.

<sup>6</sup>OEL applies to *n*-Heptane.

<sup>7</sup>OEL applies to *n*-Octane.

<sup>8</sup>OEL applies to all isomers of Nonane.

<sup>9</sup>OEL applies to *n*-Nonane.

Personal Protective Measures and Controls:

Eye Protection:	Avoid eye contact. Chemical goggles or face shield if there is a potential for sprays, mists or splashes.
Skin and Body protection:	Avoid skin contact. Wear chemical protective gloves. Consult manufacturer for glove specifications. Where splashing is possible, wear protective coveralls. Remove immediately if contaminated and launder before re-use.
Respiratory Protection:	Where necessary to maintain exposure levels below the Occupational Exposure Limits in Section 8, select appropriate NIOSH approved respiratory protection. Proper respirator selection should be determined by adequately trained personnel, and based on the contaminant(s), the potential exposure, and the published respirator protection factor.
Hygiene measures:	Observe good hygiene practices. Wash after handling the material, and before eating, drinking or smoking. Wear clean protective clothing; contaminated clothing should be promptly removed for laundering or replacement.
Engineering and Ventilation Controls:	Where applicable, adequate general or local exhaust ventilation should be used to maintain airborne concentrations below occupational exposure levels, to prevent the formation of explosive atmospheric concentrations, and to prevent the displacement of oxygen in confined areas.

**9. Physical and Chemical Properties**

Appearance & Odor:	Liquefied gas with a petroleum odor/Colorless
Physical Form:	Liquid
Flash Point:	As low as -50° F (-46° C)
Boiling Point:	< - 140° F (-95° C)
Flammability Limits in Air:	LEL < 1 % UEL = 8.0 %
Vapor Density:	> 1
Specific Gravity:	0.65 – 0.75
Solubility in Water:	Insoluble
Percent Volatile by	Up to 100

Volume:  
 Vapor Pressure: 150 – 200 psia (Reid VP) @ 100°F (38° C)  
 Autoignition Temperature As low as 450° F (232° C)

**10. Stability and Reactivity**

Stability: Stable under normal storage and handling conditions.

Conditions to Avoid and Incompatible Products: Strong oxidizers, sources of heat or ignition. Prevent vapor accumulation.

Hazardous Decomposition Products; Incomplete combustion may release carbon monoxide, carbon dioxide and smoke (non-combusted hydrocarbons).

Hazardous Polymerization: None.

**11. Toxicological Information**

	INHALATION	ORAL/INGESTION	EYE	SKIN	REPRODUCTIVE
<i>n</i> -Butane	Rat LC <sub>50</sub> 658 gm/m <sup>3</sup> /4H				
<i>n</i> -Pentane	Rat LC <sub>50</sub> 364 gm/m <sup>3</sup> /4H	Mouse LD <sub>50</sub> IV 446 mg/kg			
<i>iso</i> -Pentane	Mouse LC <sub>Lo</sub> 419 g/m <sup>3</sup> /2H				
<i>n</i> -Hexane	Human TCLo 190 ppm/8W (PNS)	Rat oral LD <sub>50</sub> 28,710 mg/kg	Rabbit - Irritation		Inh Rat TCLo 10,000 pp, /17 H reproductive Inh Rat TCLo 5000 ppm Teratogenic
<i>n</i> -Heptane	Human TCLo 1000 ppm/6M (CNS)	Mouse iv LD <sub>50</sub> 222 mg/kg			
Octane	Rat LC <sub>50</sub> 118 g/m <sup>3</sup> /4H	Mouse iv LDLo 428 mg/kg			
Nonane	Rat LC <sub>50</sub> 3200 ppm/4H	Mouse iv LD <sub>50</sub> 218 mg/kg			
Benzene	Human TC 150 ppm/15M/8Y I (carcinogenic and blood effects) Human 10 mg/m <sup>3</sup> /11Y I	Human oral LDLo 50 mg/kg	Rabbit 2 mg/24 H Severe	Rabbit 15 mg/24H mild	
Toluene	Human TCLo 100 ppm CNS	Human LDLo 50 mg/kg	Human 300 ppm	Rabbit 435 mg Mild	
Xylenes	TCLo 200 ppm Eye pulmonary LCLo 10,000 ppm/6H	Human LDLo 50 mg/kg	Human 200 ppm	Rabbit 500 mg/24H mod	

**Summary Comments:**

Acute: Mildly toxic and narcotic by inhalation or skin absorption, may cause irritation to the respiratory tract and cardiac arrhythmia. Liquid is irritating to the skin and may cause blistering. If ingested, aspiration causes severe lung irritation, coughing and pulmonary edema.

Chronic: Exposure to aliphatic compounds may cause peripheral neuropathy. Chronic exposure to aromatic hydrocarbons may cause leukemia (benzene), aplastic anemia (benzene), and dysfunction of the kidney and liver.

**12. Ecological Information**

Ecotoxicity:	Mixture is harmful to aquatic organisms; the median threshold limit (TL <sub>m</sub> ) is less than 100 ppm.
Persistence and degradability:	Mixture is expected to degrade naturally.
Bioaccumulation potential:	None.
Mobility:	The mixture will float on water with loss to air through volatilization, may foul shorelines. In soil, the mixture is expected to passively volatilize in air.

**13. Disposal Considerations**

Waste Classification	If disposed of in a container, may be defined as a RCRA hazardous waste by the characteristic, "ignitability" (D001) and benzene (D018). Refer to Sections 7 and 8 for the safe handling and storage precautions.
	All disposal activities must comply with federal, state, and local regulations.

**14. Transport Information**

When shipping at a vapor pressure > 300 kPa (43.5 psia) at 50° C, the following shipping information applies:

UN Number:	UN1965
UN Proper Shipping Name:	UN1965, Hydrocarbon gas mixture, liquefied, n.o.s., 2.1
Hazard Class:	2.1
DOT Shipping Label	FLAMMABLE GAS
Emergency Response Guide Number:	115

**15. Regulatory Information**

United States Regulations: CERCLA Hazardous Substance List (40 CFR 302.):	Benzene (CAS 71-43-2): RQ 10 lbs.
SARA Title III, Section 311:	Acute: Yes Chronic: Yes Fire: Yes Pressure: Yes Reactive: No
CWA, Section 311:	Benzene
TSCA:	None
DOT:	49 CFR Parts 191-192
OSHA	29 CFR 1910.1028, Benzene

**16. Other Information**

NFPA:	Health Hazard 2	Fire Hazard 4	Instability 0	Special Hazard
HMIS:	Health Hazard 2	Flammability 4	Physical Hazard 0	Personal Protection

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Abbreviations and Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
DOT	U.S. Department of Transportation
HMIS	Hazardous Materials Information System
IARC	International Agency for Research on Cancer
IDLH	Immediately Dangerous to Life
NIOSH	National Institute of Occupational Safety and Health
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
ppm	parts per million
SARA	Superfund Amendments & Reauthorization Act
STEL	Short Term Exposure Limit (typically a 15-minute time weighted average)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (typically 8 hours)

Disclaimer: While proper care has been taken in the preparation of this Safety Data Sheet, this information is provided without warranty. Each individual utilizing this document should make an independent determination of the methods to be used to protect the public, workers and the environment.