



Safety Data Sheet

1. Identification

Product Name: Natural Gas Liquids (Sour)
Chemical Family: Aliphatic Hydrocarbon
Manufacturers Name: Whiting Oil and Gas Corporation
Address: 1700 Broadway, Suite 2300
Denver, Colorado 80290
Product Use: Hydrocarbon fuel
Phone Number for Information: (303) 837-1661
Emergency Phone Number (Chemtrec): (800) 424-9300

Natural Gas Liquids (Sour) are a complex combination of saturated aliphatic hydrocarbons (predominantly C3 through C8) separated from natural gas by processes such as refrigeration or absorption.

2. Hazard Identification

Frost bite can occur due to the chilling process used to separate natural gas liquids from natural gas.

DANGER!
FLAMMABLE LIQUEFIED GAS

LIQUEFIED GAS UNDER PRESSURE. MAY EXPLODE IF HEATED. PRODUCES SKIN IRRITATION UPON PROLONGED OR REPEATED SKIN CONTACT. MAY CONTAIN BENZENE WHICH CAN CAUSE CANCER OR BE TOXIC TO BLOOD-FORMING ORGANS. MAY VENT HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H₂S) GAS WHICH CAN CAUSE RESPIRATORY IRRITATION AND ASPHYXIATION. UPON SUDDEN RELEASE OF PRESSURE, CAN CASUED FROSTBITE WHEN IN CONTACT WITH SKIN.

NO SMOKING!
KEEP AWAY FROM HEAT/SPARKS/OPEN FLAMES/HOT SURFACES. DO NOT BREATHE GAS. WEAR RESPIRATORY PROTECTION, PROTECTIVE GLOVES, CLOTHING AND EYE WEAR WHEN HANDLING.

Globally Harmonized System (GHS) Information

Physical Hazards Classification

Flammable Gas, Category 1
Gas Under Pressure, Liquefied gas

Health Hazards Classification


Acute Toxicity, Category 2

Serious eye damage/eye irritation, Category 2a

Specific Target organ toxicity, Category 1 (central nervous system, cardiovascular system, respiratory system)

Environmental Hazards Classification

None

GHS Label Information	
	
Symbols:	
Signal Word: Danger	
Hazard Statements:	Precautionary Statements:
Physical Hazards Extremely flammable gas Contains gas under pressure, may explode if heated	Prevention Keep away from heat/sparks/open flames/hot surfaces Do not breathe gas Do not eat, drink or smoke when using this product Use only outdoors or in a well-ventilated area Avoid release to the environment
Health Hazards Causes serious eye irritation Causes damage to central nervous system, cardiovascular system, respiratory system	Response IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call for assistance IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call for assistance.
Environmental Hazards None	Storage Store locked up Protect from sunlight. Store in a well-ventilated place Disposal <ul style="list-style-type: none">Dispose of contents/container in accordance with local/regional/national/international regulations

3. Composition/Information on Ingredients

<u>COMPOSITION</u>	<u>CAS NUMBER</u>	<u>PERCENT</u>
Natural Gas Liquids	64741-48-6	See approximate values below
Methane	8002-05-9	0-30%
Ethane	74-84-0	1-80%

Propane	74-98-6	1-80%
Butane	106-97-8	0-40%
Pentene	109-66-0	0-25%
Hexane	110-54-3	0-60%
Benzene	71-43-2	0-1%
Nitrogen	7727-37-9	0-5%
Carbon Dioxide	124-38-9	0-5%
Hydrogen Sulfide	7783-06-4	>10 ppm

4. First Aid Measures

Eye Contact

Immediately flush eyes while holding eyelids open with large amounts of clean, low-pressure, and tepid water for at least 15 minutes. If symptoms, irritation or injury persists, worsen or develop, seek medical attention.

Skin Contact

Remove contaminated clothing/shoes, wipe excess from skin. Immediately flush skin with water for 15 minutes then wash with soap and water. If illness or adverse symptoms develop or irritation persists, seek medical attention. Discard contaminated leather goods.

If liquefied product has caused a "frost burn" or "frost bite," remove contaminated clothing. Thaw frostbitten areas slowly with lukewarm water or by wrapping affected areas with blankets. Do not rub affected areas. Let circulation reestablish itself naturally, exercising area gently if possible. Seek medical attention.

Inhalation

Remove victim to fresh air and provide oxygen if breathing is labored, shallow, or difficult. Rescuer must wear appropriate supplied air respirator to remove worker from contaminated area to fresh air. Give artificial respiration if victim is not breathing. Seek medical attention immediately.

Ingestion

Do not induce vomiting and seek immediate medical attention.

5. Fire-Fighting Measures

Extinguishing Media

For small fires, class B fire extinguishing media such as carbon dioxide or dry chemical can be used. Water spray, fog, and/or foam are recommended for larger fires.

Special Fire Fighting Procedures and Precautions

Stop flow of gas before extinguishing fire as explosive reignition can occur. Use water to cool containers and exposed area. Stay upwind and out of low areas.

Unusual Fire Explosion Hazards

Container exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture (bleve). Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Sulfur oxides (SO₂) and hydrogen sulfide (H₂S), both of which are toxic, may be released upon combustion. Highly flammable vapors which are heavier than air may accumulate in low lying areas and/or spread along ground away from handling site.

NFPA Ratings

Health – 2

Flammability – 4

Reactivity – 0

Other – 0

Key: Least-0; Slight-1; Moderate-2; High-3; Extreme-4

6. Accidental Release Measures

Keep the public away. Isolate and evacuate the area. Stop leak if safe to do so and eliminate all ignition sources. Allow vapor to dissipate and ventilate low lying or closed areas to reduce the danger of explosion. Wear appropriate respirator and protective clothing. Recover and return product to proper containers.

7. Handling and Storage

Comply with all regulatory requirements. Store in suitable tanks or closed, labeled containers in a cool, well-ventilated area. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

Keep away from heat, sparks or flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all gas is gone. Containers, even those that have been emptied, can contain explosive vapors. Do not puncture, cut, drill, grind, weld or perform similar operations on or near containers. Bond and ground transfer containers.

Product should never be used as a solvent due to its flammable and potentially toxic properties. Siphoning by mouth can result in lung aspiration which can be harmful or fatal. Avoid skin contact.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

<u>COMPONENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV TWA</u>
Natural Gas Liquids	Not available	Not available
Methane	Not available	1000 ppm*
Ethane	Not available	1000 ppm*
Propane	Not available	1000 ppm*
Butane	Not available	1000 ppm*
Pentene	1000 ppm	600 ppm
Hexane	500 ppm	500 ppm/STEL 1000 ppm
Benzene	1 ppm**/STEL 5 ppm	0.5 ppm
Nitrogen	Not available	simple asphyxiant
Carbon Dioxide	5000 ppm	5000 ppm/STEL 30000 ppm
Hydrogen Sulfide	20 ppm ceiling ***	10 ppm/STEL 15 ppm

Notes:

* Aliphatic Hydrocarbon Gas (Alkane C1-C4)

** OSHA's action level is 0.5 ppm (29 CFR 1910.1028)

Engineering Controls

Maintain air concentrations below flammable limits and occupational exposure standards for chemical components by using ventilation and other engineering controls.

Personal Protective Equipment

Eye/Face Protection

Always use safety glasses with side shields. Splash Goggles with face shield are appropriate when there is a potential for splashing or sudden release.

Skin Protection

Avoid unnecessary skin contact with material – use insulated and/or chemical resistant (e.g. neoprene or nitrile) gloves as appropriate.

Respiratory Protection

Wear NIOSH approved organic vapor chemical cartridge or supplied air respirators when ventilation is inadequate or when exposures to any components exceed the occupational exposure limit. In case of firefighting or a spill or leak resulting in unknown concentrations, use NIOSH approved supplied air respirator. Do not enter storage compartments or hydrogen sulfide areas unless equipped with a NIOSH approved supplied air apparatus (SCBA or air line unit) with full face piece operated in a positive pressure mode.

Note:

Personal protection information shown in this section is based upon general information and normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

9. Physical and Chemical Properties

Appearance and Odor: Colorless clear liquid with a slight hydrocarbon odor. Also possible sulfur (rotten egg like) odor if hydrogen sulfide is present. Note that hydrogen sulfide causes olfactory fatigue (you can not smell it at high concentrations)

pH: not available

Melting Point: not available

Boiling Point: -127-257F

Flash Point and Method: <100°F / closed cup

Evaporation Rate: >1 (N-Butyl Acetate =1)

Flammable Limits: Varies based on components

Vapor Pressure: not available

Specific Gravity: 0.5-0.7 (water = 1.0)

Vapor Density: 1-3.9 (air=1)

Density: 2-6 pounds/gallon

Solubility: negligible

Partition Coefficient (n-octanol/water): not available

Autoignition Temperature: not available

Decomposition Temperature: not available

Viscosity: not available

10. Stability and Reactivity

Stability: Stable

Hazardous polymerization: Will not occur

Conditions and Materials to Avoid: Avoid heat, sparks, flame and contact with strong oxidizing agents such as nitrates, perchlorates, chlorine, and fluorine.

Hazardous Decomposition Products: Thermal decomposition products are highly dependent on the combustion conditions. Carbon monoxide and other unidentified organic compounds may be formed upon combustion.

11. Toxicological Information

Acute toxicity May cause nausea, diarrhea, loss of appetite, dizziness, disorientation, headache, excitation, rapid respiration, drowsiness, labored breathing, anesthesia and other central nervous system effects. May cause lung paralysis and asphyxiation. Extreme overexposure may cause rapid unconsciousness and respiratory arrest especially when hydrogen sulfide is present.

Skin corrosion/irritation - May cause slight irritation. Direct contact with liquefied gas may cause freeze burns.

Eye damage/irritation - May cause irritation including pain, blurred vision, redness, tearing and superficial corneal turbidity.

Sensitization - Not known to cause respiratory or skin sensitization

Germ cell mutagenicity – A weakly positive response was seen in the Mouse Lymphoma Mutagenic assay for Hexane.

Carcinogenicity – Product may contain benzene which is a known human carcinogen.

Reproductive toxicity – Not a known reproductive toxin

Specific Target Organs/Systemic Toxicity – Blood/bone marrow, central nervous system, respiratory, eye, skin

Aspiration hazard – Not applicable

Other potential health effects - Hexane harms the nervous system producing a lack of feeling in the extremities and more severe nerve damage in humans. Carbon dioxide exposure may cause acidosis and imbalance of electrolytes in the blood. Hydrogen sulfide may cause nerve damage.

12. Ecological Information

None identified – Natural gas liquids will vaporize and dissipate in air.

13. Disposal Considerations

This product, as produced, is not specifically listed as an EPA RCRA hazardous waste according to 40 CFR 261. However, when disposed of, it may meet the criteria of a “characteristic” hazardous waste (e.g. D001 – ignitable). This product could also contain benzene and could be considered hazardous because it exhibits the characteristic of “toxicity.” It is the responsibility of the user to determine if the material is considered hazardous for disposal under federal, state and local regulations.

14. Transportation Information

Department of Transportation Classification: Flammable Liquid

D.O.T. proper shipping name: Petroleum Gas, Liquefied

ID Number: UN 1075

Hazard Class: 2.1

Packing Group Not applicable

15. Regulatory Information

TSCA This product is listed on the TSCA chemical inventory.

SARA Section 302 This product contains trace amounts of hydrogen sulfide (H₂S) which has been listed on the EPA's extremely hazardous substance list.

SARA Section 304 This product contains the following component(s) which in the event of a spill may be subject to SARA reporting requirements: benzene, hydrogen sulfide (H₂S).

SARA Section 311/312 The following hazard categories apply to this product:

Acute health hazard

Chronic health hazard

Fire hazard

Sudden release of pressure

SARA Section 313 This product may contain any the following components which may be subject to reporting on a toxic release inventory: Benzene, cyclohexane, hydrogen sulfide (H₂S).

EPA-CWA Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 800-424-8802.

16. Other Information

Date Prepared: August 29, 2008

Revised: October 30, 2013

Last Reviewed: October 30, 2013

Disclaimer:

The information and recommendations contained in this SDS are believed to be accurate at the date of its preparation. Whiting Oil and Gas Corporation makes no representations or warranties, express or implied, with respect to the accuracy or completeness of the information contained herein. Whiting Oil and Gas Corporation assumes no responsibility for incorrect handling or use of the product or the inherent hazards in the product itself.