SAFETY DATA SHEET

According to OSHA HCS 2012 (29 CFR 1910.1200)

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Natural Gas
Other means of identification: Methane, Residue Gas, Natural Gas Sweet, Wellhead Gas, Marsh Gas, Fuel Gas, Petroleum Gas
CAS Number: 8006-14-2
SDS Number:
Product type: Compressed Gas
Identified uses: Industrial Use; Fuel

Manufacturer:
TreeTop Midstream, LLC.
602 Crescent Place
Ridgeland, MS 39157

SDS Information:
Phone: 601.898.7444
Fax: 601.898.7445
URL: www.treetopmidstream.com

Emergency Health and Safety Number:
(800) 696-2940 (24 hours)

SECTION 2: CHEMICAL HAZARDS IDENTIFICATION

GHS Classification:
H220 - Flammable gases, Category 1
H280 - Gases under pressure (compressed gas)
H361 – Reproductive Toxicity, Category 2

GHS Label Elements

Hazard Symbol(s):

Signal Word: Danger

Hazard Statement(s):
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.
H361: Suspected of damaging fertility or the unborn child.

Precautionary Statements:

Prevention
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

	P381: Eliminate all ignition sources if safe to do so. **Response:** P308:+P313: IF exposed or concerned: Get medical advice/attention. **Storage:** P405: Store locked up. P410+403: Protect from sunlight. Store in a well-ventilated place. **Disposal:** P501: Dispose of contents/container to approved disposal facility.
Other Hazards:	Simple asphyxiant - may displace oxygen and cause rapid suffocation. May form explosive mixtures with air. Contact with liquid may cause frostbite.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	% By Weight
Methane	74-82-8	70-99
Ethane	74-84-0	1-12
Propane	74-98-6	0-8
Butanes	106-97-8	0-5
Pentane	109-66-0	0-3
Carbon Dioxide	124-38-9	0-1.5
Hexanes	110-54-3	0-1
Hydrogen	1333-74-0	0-<1

All concentrations are percent by weight unless ingredient is a gas, gas concentrations are percent by volume. Data are typical values based on material tested, but may vary from sample to sample.

SECTION 4: FIRST AID MEASURES

Eye Contact:
Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove contact lenses if present and easy to do. Continue to rinse for at least 15 minutes. Get medical attention if eye irritation persists.

Inhalation:
If irritation, headache, nausea, or drowsiness occurs, remove victim from the source of exposure and into fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. Seek medical attention if respiratory irritation persists.

Skin Contact:
Liquefied gases may cause cryogenic burns, in case of cryogenic burn immediately place affected area in lukewarm water to slowly warm. DO NOT USE HOT WATER. If skin irritation persists, call a physician and seek immediate medical attention.

Ingestion:
As this product is a gas under normal atmospheric conditions, ingestion is unlikely.

Most Important Symptoms and Effects:

Acute: May cause frostbite. Inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include difficulty breathing, headache, dizziness, and nausea; at high concentrations, unconsciousness or death may occur.

Delayed: None known. Refer to Section 11 – Toxicological Information

Notes to Physician:
May sensitize the heart to epinephrine or other circulating catecholamines so that arrhythmias may occur. Careful consideration is essential preceding administration of epinephrine, cardiac stimulants or other treatment. If sympathomimetic are administered, observe for the development of cardiac arrhythmias.

SECTION 5: FIRE-FIGHTING MEASURES

NFPA Hazard Class:
Health – 1
Fire – 4
Reactivity – 0
Specific Hazard – N/A

Extinguishing Media:
Carbon dioxide or dry chemical is the recommended media. Flood large fires with fine water spray.

Specific Hazards arising from the chemical:
Severe explosion and fire hazard. Contents under pressure, so containers may rupture or explode if exposed to heat. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

Thermal Decomposition Products or Combustion:
Oxides of carbon and oxides of nitrogen.

Special Protective Actions for Fire-Fighters:
Move container from fire area if it can be done without risk. Cool containers from a safe distance with water spray until well after the fire is out. Stay away from ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry. Withdraw immediately in case of rising sound from venting safety device. Do not attempt to extinguish fire unless flow of material can be stopped first. Be aware that a BLEVE (Boiling Liquid Expanding Vapor Explosion) may occur unless surfaces are kept cool with water. Apply water from a protected location or from a safe distance. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire.

Special Protective Equipment for Fire-Fighters:
Emergency responders should wear proper protective equipment and a positive pressure self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:
Extremely flammable; avoid heat, flames, sparks, and other sources of ignition. Spills of liquids can create a fire hazard and may form an explosive atmosphere. The vapor is heavier than air and can accumulate in low areas. Avoid breathing vapors, mist or gas. Vapors may travel long distances to a source of ignition where they can ignite, flash back, or explode. Vapors are heavier than air and can accumulate in low areas. Stay upwind from release, and avoid direct contact. Ventilate closed spaces before entering. Notify persons downwind for large spills. Ventilate area and allow material to evaporate.

Environmental Precautions:
Prevent further release if it can be done safely. Prevent material from entering sewers and drains. If the material contaminates waterways or drains then notify appropriate authorities.

Methods and Material for Containment and Cleaning up:
Stop leak without risks if possible. Ventilate area. Contain spillage using spark-proof tools and explosion-proof equipment. Place cleanup materials in container for disposal according to local / national regulations.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:
Ground / bond any equipment used in handling the material. Only use non-sparking tools; keep away from heat, sparks, open flame or other ignition source. Use only explosion-proof electrical (ventilation, lighting, etc.) equipment. Do not allow eating, drinking, or smoking in the area. Provide adequate ventilation. Empty containers retain product residue and can be hazardous, do not puncture or incinerate container.

Conditions for Safe Storage:
Store in accordance with local regulations. Store in a segregated and approved area that is cool, dry, well-ventilated, and away from direct sunlight or any ignition sources. Keep container tightly closed and sealed. Store separate from any incompatible material (Section 10).

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	OSHA PEL (ppm)	ACGIH TLV (ppm)	Other
Methane	None	None	Asphyxiant
Ethane	None	None	Asphyxiant
Propane	1000	1000	1000 ppm REL (NIOSH) 2100 ppm IDLH(NIOSH) Asphyxiant
Butanes	None	1000	800 ppm REL (NIOSH) Narcosis, Asphyxiant
Pentane	1000	1000	120 ppm REL (NIOSH) 1500 ppm IDLH (NIOSH)
Carbon Dioxide	5000	5000	40,000 IDLH (NIOSH) 30,000 STEL (NIOSH)
Hexanes	500	50	50 ppm REL (NIOSH) 1100 ppm IDLH (NIOSH)
Hydrogen	None	None	None

Engineering Controls:
General or local exhaust ventilation and other forms of engineering controls are the preferred means for keeping worker exposure to airborne contaminants below any recommended or statutory limits. If ventilation cannot reduce airborne concentrations below acceptable limits, appropriate respiratory protection should be used.

Hygiene Measures:
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing.

Eye/Face Protection:
Safety eyewear (such as splash goggles) that meets ANSI Z.87.1 should be used to avoid exposure to liquid splashes, mists, gases, or dusts. Face shields may be necessary if contact is possible.

Hand Protection:
Chemical resistant, impervious gloves should be worn at all times when handling chemical products. Consider the parameters specified by the glove manufacturer, check that the gloves are still retaining their protective properties prior to use. Gloves should be discarded if there is any degradation or breakthrough.

Body Protection:
Wear flame retardant anti-static protective clothing. When there is a risk of liquid exposure, wear cold insulating clothing.

Respiratory Protection:
A NIOSH approved air purifying respirator with an appropriate cartridge or canister may be appropriate under certain conditions where airborne concentrations are expected to exceed exposure limits. Appropriate respirator selection should be made by a qualified professional as part of a comprehensive respiratory program as described in 29 CFR 1910.134. Protection provided by air-purifying respirators is limited and should not be used in atmospheres deficient in oxygen or where airborne concentrations are immediately dangerous to life or health. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstances where air-purifying respirators may not provide adequate protection.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless	**Flammability (Solid, gas):**	Extremely Flammable
Physical Form:	Gas		
Odor:	None to slight hydrocarbon odor - mercaptan may be added as odorant.	**Upper Explosive Limit:**	14%
		Lower Explosive Limit:	4%
		Vapor Pressure:	No Data
Odor Threshold:	No Data	**Vapor Density (air=1):**	0.6
pH:	Not Applicable	**Viscosity:**	Not Determined
Melting Point:	No Data	**Partition Coefficient (n-octanol/water):**	No Data
Boiling Point:	-259° F (-162° C)	**Auto Ignition Temperature:**	1000° F(538° C)
Flash Point:	-306° F (-187° C)	**Decomposition Temperature:**	No Data
Evaporation Rate:	No Data	**Volatile Percent:**	100%
Solubility in Water:	Slight	**Specific Gravity (Water =1):**	Not Determined
Solubility in Other Solvents:	Not Determined		

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Stable at normal ambient temperatures and pressure
Chemical Stability:	Stable at normal ambient temperatures and pressure
Possibility of Hazardous Reactions:	Hazardous reactions are not anticipated
Conditions to Avoid:	Avoid all possible sources of ignition. Containers may rupture or explode if exposed to heat.
Incompatible Materials:	Avoid contact with acids and oxidizing materials.
Hazardous Decomposition Products:	Oxides of carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects:
Acute Toxicity:

Product Name	Result	Species	Dose	Exposure
Natural Gas	Oral LD_{50}, no data available			

Natural Gas	Inhalation LC_{50}, no data available			
Natural Gas	Dermal LD_{50}, no data available			
Components				
n-Pentane	Oral LD_{50} >2,000 mg/kg	Rat (male and female)	2,000 mg/kg	
n-Pentane	Inhalation LC_{50} (vapor) > 20,000 ppm	Rat (male)		4 hours
n-Hexane	Inhalation LC_{50} (vapor) >31.86 mg/L	Rat (male and female)	31.86 mg/L	4 hours
n-Hexane	Dermal LD_{50} > 2,000 mg/kg	Rabbit (male and female)	2000 mg/kg	

Skin Irritation/Corrosion: Contact with the liquefied or pressurized gas may cause frostbite (cold burn).

Serious Eye Damage/Irritation: Contact with the liquefied or pressurized gas may cause frostbite (cold burn).

Respiratory/Skin Sensitization: Not expected to be a respiratory or skin sensitizer

Mutagenicity: Not expected to cause mutagenicity effects.

Carcinogenicity: Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA

Reproductive Toxicity: May cause reproductive effects.

Developmental/Teratogenicity: Not expected to cause developmental/teratogenicity effects.

Specific Target Organ Toxicity (single exposure): May cause central nervous system effects following single exposure.

Specific Target Organ Toxicity (repeated exposure): Not expected to cause effects on specific organs following repeated exposures.

Aspiration Hazard: Not applicable

Information on the Likely Routes of Exposure:
Potential Acute Health Effects:

Eye Contact: Contact with liquefied or pressurized gas may cause burns similar to frostbite.

Inhalation: Unlikely to be harmful. High concentrations in confined spaces may limit oxygen available for breathing.

Skin Contact: Dermal contact with liquefied or pressurized gas may cause burns similar to frostbite.

Ingestion: Ingestion is not considered a potential route of exposure.

Symptoms related the Physical, Chemical and Toxicological Characteristics: At high concentrations, simple asphyxiants can cause narcotic effects. Symptoms of overexposure may include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Eye and skin contact, or ingestion may cause burns similar to frostbite.

Delayed and Immediate Effects and also Chronic Effects from Short and Long Term Exposure: May cause reproductive effects.

Potential Chronic Health Effects:

General:	There are no known effects
Carcinogenicity:	There are no known effects
Mutagenicity:	There are no known effects
Teratogenicity:	There are no known effects
Developmental Effects:	There are no known effects
Fertility Effects:	There are no known effects

Numerical Measures of Toxicity: Not available

Component Toxicology:

Mutagenicity :

Component	Type of Study	In Vitro/In Vivo	Metabolic Activation	Result
Propane	Ames Test	In Vitro	With and Without	Negative
Butanes	Chromosome Aberration	In Vitro	With and Without	Negative
Butanes	Ames Test	In Vitro	With and Without	Negative
Butanes	Drosophila Sex Linked Recessive Lethal Assay	In Vivo	Not Applicable	Negative
Methane	Ames Test	In Vitro	With and Without	Negative

Repeated Dose (Inhalation):

Ethane (74-84-0): No systemic toxicity or neurological effects were observed in male or female rats exposed to 0, 1,600, 5,000, or 16,000 ppm ethane 6 hours/day, 7 days/week up to six weeks. Based on this study, a no observed adverse effect concentration (NOAEC) of 16,000 ppm was determined for systemic effects.

Propane (74-98-6): Male and female rats were exposed to 0, 1,200, 4,000, or 12,000 ppm propane 6 hours/day, 7 days/week up to six weeks. For this study, the NOAEC for male rats was 4,000 ppm based on reduced bodyweight gain at 12,000 ppm during the first week and the NOAEC for female rats was 12,000 ppm (no effects were observed).

Butanes (106-97-8): No systemic toxicity or neurological effects were observed in male or female rats exposed to 0, 900, 3,000, or 9,000 ppm n-butane 6 hours/day, 7 days/week for 28 days. A NOAEC of 9,000 ppm was determined for systemic effects based on this study.

Hexanes (110-54-3): Mice were exposed by inhalation to 0, 500, 1000, 4000, or 10000 ppm n-hexane for 6 hours/day, 5 days/week for 13 weeks. Decrease locomotion was observed in female mice at 1000 ppm. Nasal lesions were seen in females in all exposure groups and males exposed to 1000 ppm. The LOAEC was determined to be 500 ppm for females and 1000 ppm for males. The NOAEC for males was 500 ppm.

Reproductive/Developmental Toxicity (Inhalation):
Ethane (74-84-0): No adverse effects on mating, fertility, gestational indices or reproductive performance were observed in male or female rats exposed to 0, 1,600, 5,000, or 16,000 ppm ethane 6 hours/day, 7 days/week for up to 6 weeks prior to, during, and after mating. Based on this study a NOAEC of 16,000 ppm was determined.
Propane (74-98-6): Male and female rats were exposed to 0, 1,200, 4,000, or 12,000 ppm propane 6 hours/day, 7 days/week up to six weeks prior to, during, and after mating. There were no effects on fertility or reproductive performance, including offspring survival and weight development up to post-natal day 4. A NOAEC of 12,000 ppm was determined for fertility, reproductive, and developmental endpoints in this study
Butanes (**106-97-8):** No adverse effects on mating, fertility, gestational indices or reproductive performance were observed in male or female rats exposed to 0, 900, 3,000, or 9,000 ppm n-butane 6 hours/day, 7 days/week for up to 6 weeks prior to, during, and after mating. Based on this study a NOAEC of 9000 ppm was determined.
Hexanes (110-54-3): Male rats exposed by inhalation to 5000 ppm n-hexane for 6 weeks showed complete atrophy of the seminiferous tubules. Female mice were exposed to 0, 200, 1000 or 5000 ppm n-hexane for 20 hours/day during gestational days 6-17. There was a significant reduction in gravid uterine weight and increase in intrauterine death in the 200 ppm group. There was no NOAEC established.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity:	No data available. Gases will evaporate from the surface and will not have significant adverse effects in the aquatic environment.
Persistence and Degradation:	No data available
Bioaccumulative Potential:	No data available
Mobility in Soil:	Gases will evaporate and should not be mobile in soil
Other Adverse Effects:	No known significant effects

SECTION 13: DISPOSAL CONSIDERATIONS

This material is a gas and would not typically be managed as a waste. Dispose of containers in accordance with federal, state and local requirements.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name: Natural gas, compressed
UN Number: UN1011
Hazard Class: 2.1
Packing Group: N/A
Marine Pollutant:

SECTION 15: REGULATORY INFORMATION

OSHA Hazard Communication Standard: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

US Federal Regulations:

United States Inventory (TSCA 8b): All components are listed or exempted.
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs): Components not listed

Clean Air Act Section 112(r) for Accidental Release Prevention: Components listed
Ingredients: Methane (74-82-8)
Ethane (74-84-0)
Propane (74-98-6)
Butane (106-97-8)
Pentane (109-66-0)
Carbon Dioxide (124-38-9)
Hexanes (110-54-3)
Hydrogen (1333-74-0)

Clean Air Act Section 602 Class I Substances: Components not listed
Clean Air Act Section 602 Class II Substances: Components not listed
DEA List I Chemicals (Precursor Chemicals): Components not listed
SARA 302/304: No products were found for composition/information on ingredients.
SARA 304 RQ: Not applicable
SARA 311/312 Classification: Acute health; fire hazard; sudden release of pressure

Composition/Information on Ingredients:

Name	%	Fire Hazard	Sudden Release of Pressure	Reactive	Immediate (acute) Health Hazard	Delayed (chronic) Health Hazard
Methane	70-99	Yes	Yes	No	No	No
Ethane	70-90	Yes	Yes	No	No	No
Propane	10-30	Yes	Yes	No	No	No
Butanes	0-5	Yes	Yes	No	No	No
Pentane	0-3	Yes	Yes	No	No	No
Carbon Dioxide	0-1.5	No	Yes	No	No	No

Hexanes	0-1	Yes	Yes	No	Yes	Yes
Hydrogen	0<1	Yes	Yes	No	No	No

SARA 313: This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Product Name	**CAS Number**	**%**
Hexanes	110-54-3	0-1

State Regulations:

Massachusetts: Right to Know Substance List

Ingredients: Methane (74-82-8)
Ethane (74-84-0)
Propane (74-98-6)
Butanes (106-97-8)
Pentane (109-66-0)
Carbon dioxide (124-38-9)
Hexanes (110-54-3)
Hydrogen (1333-74-0)

New York: Right to Know Hazardous Substance List

Ingredients: Methane (74-82-8)
Ethane (74-84-0)
Propane (74-98-6)
Butanes (106-97-8)
Pentane (109-66-0)
Carbon dioxide (124-38-9)
Hexanes (110-54-3)
Hydrogen (1333-74-0)

New Jersey: Right to Know Hazardous Substance List

Ingredients: Methane (74-82-8)
Ethane (74-84-0)
Propane (74-98-6)
Butanes (106-97-8)
Pentane (109-66-0)
Carbon dioxide (124-38-9)
Hexanes (110-54-3)
Hydrogen (1333-74-0)

Pennsylvania: Right to Know Substance List

Ingredients: Methane (74-82-8)
Ethane (74-84-0)
Propane (74-98-6)

Butanes (106-97-8)
Pentane (109-66-0)
Carbon dioxide (124-38-9)
Hexanes (110-54-3)
Hydrogen (1333-74-0)

California Proposition 65: Ingredients in this product are not regulated. This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: OTHER INFORMATION

HMIS Hazard Rating:
Health – 1
Flammability – 4
Physical Hazard – 1
Personal Protection – N/A

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists	NIOSH	National Institute of Occupational Safety and Health
ANSI	American National Standards Institute	NTP	National Toxicology Program
CAS	Chemical Abstract Service	OSHA	Occupational Safety & Health Administration
CFR	Code of Federal Regulations	PEL	Permissible Exposure Limit
DEA	Drug Enforcement Administration	REL	Recommended Exposure Limit
GHS	Globally Harmonized System of Classification and Labeling of Chemicals	RQ	Reportable Quantity
HMIS	Hazardous Materials Information System	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
IDLH	Immediately Dangerous to Life and Health	SDS	Safety Data Sheet
LC_{50}	Lethal concentration 50	STEL	Short Term Exposure Limit
LD_{50}	Lethal Dose 50	TLV	Threshold Limit Value
IARC	International Agency For Research On Cancer	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NOAEC	No Observed Adverse Effect Concentration	US	United States

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