

1. IDENTIFICATION

Product Identifier	Natural Gas, Odorized
Synonyms:	Fuel Gas, Residue Gas, Compressed Natural Gas (CNG), Dry Natural Gas, Methane, Pipeline Spec Gas, Processed Gas, Raw Gas (odorized), Sweet Raw Gas (odorized), Sweet Natural Gas (odorized), Wellhead Natural Gas, Sweet (odorized), Marsh Gas, Methyl Hydride
Intended use of the product	Fuel
Contact:	Global Companies LLC 275 Grove Street Newton, MA 02466 www.globalp.com
Contact Information:	EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300 COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flammable Gas	Category 1	H220
Compressed gas		H280
Simple Asphyxiant		

Labeling Elements



Signal Word (GHS-US):

Hazard Statements (GHS-US):

Danger

H220 - Extremely flammable gas.

H280 - Contains gas under pressure; may explode if heated.

May displace oxygen and cause rapid suffocation.

Precautionary Statements (GHS-US):

P210 - Keep away from heat, open flames, hot surfaces, sparks. - No smoking.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.
P501 - Dispose of contents/container according to local, regional, national, and international regulations.

Other information:

NFPA 704

Health: 2

Fire: 4

Reactivity: 0


3. COMPOSITION / INFORMATION ON INGREDIENTS
Chemical Composition Information

Mixture

Name	Product Identifier (CAS#)	% (w/w)	Classification
Methane	74-82-8	97 - 100	Simple Asphy; Flam Gas 1, H220; Compressed gas, H280
Ethane	74-84-0	0 - 3	Simple Asphy; Flam Gas 1, H220; Compressed gas, H280
Propane	74-98-6	0 - 3	Simple Asphy; Flam Gas 1, H220; Compressed gas, H280
Butane	106-97-8	0 - 3	Simple Asphy; Flam Gas 1, H220; Compressed gas, H280
Pentane	109-66-0	0 - 3	Flam Liq 2, H225; STOT SE 3, H336; Asp Tox 1, H304; Aquatic Chronic 2, H411
*tert-butyl mercaptan	75-66-1	0% to trace	Flam Liq 2, H225; Skin Sens 1, H317; Aquatic Chronic 2, H411
*isopropyl mercaptan	75-33-2	0% to trace	Flam Liq 2, H225; Skin Sens 1, H317; Aquatic Acute 1, H400; Aquatic Chronic 1, H410
*propyl mercaptan	107-03-9	0% to trace	Flam Liq 2, H225; Skin Sens 1B, H317, Aquatic Acute 1, H400, Aquatic Chronic 1, H410.
*sec-butyl mercaptan	513-53-1	0% to trace	Flam Liq 2, H225; Skin Irrit 2, H315; Eye Irrit 2, H319; STOT SE 3, H335

*These are odorants. This product is odorized and contains about 0.0013% of these odorants, consisting of 80% isopropyl mercaptan and about 10% of the others.

4. FIRST AID MEASURES

Route	Measures
Inhalation	Move person to fresh air and seek medical attention. If person is not breathing, provide artificial respiration. Provide additional oxygen once breathing is restored if trained.
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely. Risk of ingestion is extremely low. However, if oral exposure occurs do not induce vomiting. Seek medical attention.
Eye Contact	If injury is due to pressure, treat abrasions/contusions symptomatically. In case of freeze burn cover eyes to protect from light and then seek medical attention.
Skin Contact	If injury is due to pressure, treat abrasions/contusions symptomatically. Remove contaminated clothing. In case of blistering, frostbite or freeze burns seek immediate medical attention.

Most Important Symptoms

Simple asphyxiants are inert gases or vapors that displace oxygen from the air, primarily in enclosed spaces, and, thus, result in hypoxia. Dermal exposure may cause frostbite.

Immediate Medical Attention and Special Treatment

If prolonged exposure or hypoxia is suspected, provide ventilation and oxygenation and administer 100% humidified supplemental oxygen with assisted ventilation, as required. Rewarm or use topical treatment for frostbite injury. If eyes were exposed, irrigate with copious amounts of room temperature water for at least 15 minutes and seek medical attention.

5. FIRE-FIGHTING MEASURES**Extinguishing Media**

Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, firefighting foam, or Halon. However, fires should not be extinguished unless flow of gas can be immediately stopped.

Specific Hazards / Products of Combustion

Evacuate area. Stay upwind. Natural gas is an explosion hazard and causes a dangerous fire when vapors are ignited from heat, spark, open flame or other source of ignition. Natural gas is lighter than air and may travel long distances to a point of ignition and flash back. Container may explode in heat or fire. Natural Gas releases flammable gas at well below ambient temperatures and readily forms a flammable mixture with air.

Combustion may produce carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters

If a leak has not ignited, use water spray to contain the vapors and to protect personnel attempting to stop the leak.

For fires in enclosed/confined areas, a self-contained breathing apparatus (SCBA) must be worn.

Unless creating a greater hazard, gas fires should not be extinguished. Re-accumulation of gas can result in an explosion. Fire impingement on surfaces (especially if the fire has been ongoing for a long period of time) could create sufficient heat to reignite product.

Fire Fighting Equipment/Instructions

Gas fires should not be extinguished unless flow of gas can be immediately stopped. Use water spray to protect personnel attempting to shut off gas source. Allow gas to burn out. Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. Remove combustible materials from immediate area if it can be done so safely. For large fire the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Isolate area, particularly around ends of storage vessels. Let vessel, tank car or container burn unless leak can be stopped. Stay away from the ends of tanks and transports. Withdraw immediately in the event of a rising sound from a venting safety device. Large fires typically require specially trained personnel and equipment to isolate and extinguish the fire.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature, and explosive limits.

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions**

Do not touch if in a liquid state as it is a frost bite/freeze burn hazard. Avoid all contact with skin, eyes, or clothing. Avoid breathing gas. Use special care to avoid static electric charges. Eliminate every possible source of ignition. Keep away from heat/sparks/open flames/hot surfaces.

Emergency Measures

Evacuate nonessential personnel and secure all ignition sources. No road flares, smoking or flames in hazard area. Consider wind direction, stay upwind and uphill, if possible. Evaluate the direction of product travel. Vapor cloud may be white, but color will dissipate as cloud disperses - fire and explosion hazard is still present. Releases indoors should be controlled remotely from a safe area. All personnel should evacuate interior locations using great care not to generate ignition sources. Product is lighter than air. Passive ventilation may be used to dilute gas concentrations to prevent an explosive atmosphere.

Environmental Precautions

Do not flush down sewer or drainage systems if in a liquid state.

Containment and Clean-Up Methods

Stop the source of the release, if safe to do so. Use a water spray to control vapors while personnel attempt to shut off source from a distance. Due the potential for fire or explosion from accumulation of vapors, spills or releases of this product should not be contained. Diversionary structures may be used to keep out of low lying areas, catch basins, culverts, and water bodies. Product should not be flushed or sprayed with water in a liquid state. Firefighting foam is not an effective knock-down agent for this product. Water fog sprayed into the air as a mist may be used as a capable knock-down agent. By forced ventilation, maintain concentration of gas below the range of explosive mixture. Remove the tank or cylinder to an open area. Leave to bleed off in the atmosphere.

Response and cleanup crews must be properly trained and must utilize proper protective equipment.

Refer to Section 8 for additional information, cleanup methods, and environmental precautions.

7. HANDLING AND STORAGE

Handling Precautions

Handle as a flammable gas. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified areas. Bond and ground containers during product transfer pursuant to NFPA 52 NFPA 70 and API RP 2003 to reduce the possibility of static-initiated fire or explosion. Use only in well ventilated areas. Product can displace oxygen at high concentrations. Do not enter confined spaces where product may be present. Test all confined spaces where product may accumulate for the presence of oxygen and combustible vapors.

Storage

Compressed gases may be stored in the open only if they are adequately protected from the weather and direct sunlight. Storage areas should be located at a safe distance from occupied premises and neighboring dwellings. Protect against physical damage. Outdoor or detached storage is preferred. Store in cool, well ventilated place and isolate from oxidizing agents. Prohibit open flame/smoking. Keep away from flame, sparks, excessive temperatures and open flame. Inspect for leakage occasionally. Storage temp: -260 °F. Check local fire codes and requirements for storage limitations / prohibitions indoors. Outdoor storage is recommended. Keep containers out of direct sunlight and exposed to temperatures in excess of 125 °F.

Only qualified personnel with approved dispensing equipment may load / or unload this product. Keep containers closed and clearly labeled. Store / transfer only into approved containers. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Post "No Smoking" signs in product handling and storage areas.

Incompatibles

Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
Methane	74-82-8	ACGIH TWA	SA*
Ethane	74-84-0	ACGIH TWA	1000 ppm
Propane	74-98-6	ACGIH TWA OSHA PEL	SA* 1000 ppm
Butane	106-97-8	ACGIH STEL	1000 ppm
Pentane	109-66-0	ACGIH TWA OSHA PEL	1000 ppm 1000 ppm

SA: Simple Asphyxiant. Significant quantities of component may displace oxygen, which is the limiting factor for exposure. See Appendix F of ACGIH Threshold Limit Values for Chemical Substances and Physical Agents for more information.

Engineering Controls

Product should only be stored and conveyed in equipment and using materials specifically designed for gas service. Systems should be designed and installed by qualified personnel. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure. Do not vent indoors or other confined areas. If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure or explosive limits, additional engineering controls may be required.

Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Safety glasses and face shield should be used to minimize potential injury on contact with pressurized gas
Skin	Use cold-impervious, insulating gloves where contact with pressurized gas may occur. The use of skin protection is not normally required. It is always good industrial hygiene practice to use gloves and apron when working with pressurized gas.
Respiratory	Use a NIOSH approved self-contained breathing apparatus (SCBA), respirator or equivalent in a pressure demand or other positive pressure. It should be used in situations of oxygen deficiency (oxygen content less than 19.5%) or unknown exposure concentrations. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.
Thermal	No thermal protection is required except for emergency operations involving actual or potential for fire.

Primary hazard of this product is storage at pressure, asphyxiation and fire. Personal protective equipment is not an effective control for physical hazards. These hazards should be recognized and avoided when encountered. Pressurized gas may be stored at pressures in excess of 3,000 psi.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	Comments
Appearance	Colorless gas	
Odor	Distinctive Natural Gas, slight sulfur odor, "rotten egg"	Mercaptan
Odor Threshold	5-10 ppb	As odorized gas
pH	Not available	
Melting Point	-296.7 °F (-182.6 °C)	
Boiling Point Range	-258.52 °F (-161.4 °C)	
Flash Point	-306 °F (-188 °C)	
Evaporation Rate	Not available	
Flammability	Compressed Gas	
Flammable Limits	5.0% - 15.0% by volume	
Vapor Pressure	4.55X10 ⁵ mmHG @ 25 °C	
Vapor Density	0.554air = 1	
Material Density	.7168 g/liter	
Solubility	very slight	
Partition Coefficient (N-octanol/water)	Not available	
Autoignition Temperature	999 °F (537 °C)	
Decomposition Temperature	Evaporation or ignition likely before decomposition will occur	
Viscosity	Not available	
Percent Volatiles	100%	

10. STABILITY AND REACTIVITY

Stability

Stable under normal ambient and anticipated conditions of use.

Reactivity

Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Incompatibility

Strong oxidizers.

Conditions to Avoid

High temperatures, open flames, sparks, welding, smoking, all ignition sources.

Hazardous Decomposition Products

Not anticipated under normal conditions of use. Byproducts of combustion include oxides of nitrogen, carbon dioxide, carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:

Acute Toxicity (Inhalation LC50)

Ethane (74-84-0)

LC50 Inhalation Rat 658 mg/l/4h (IUCLID)

Propane (74-98-6)

LC50 Inhalation Rat 658 mg/l/4h (IUCLID)

Butane (106-97-8)

LC50 Inhalation Rat 658 mg/l/4h (HSDB)

Pentane (109-66-0)

LC50 Inhalation Rat 364 g/m3/4h (IUCLID)

Acute Toxicity (Dermal LC50)

Pentane (109-66-0)

LD50 Dermal Rabbit 3000 mg/kg (IUCLID)

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: OSHA: NO IARC: NO NTP: NO ACGIH: No

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Exposure Routes: Inhalation at high concentrations in confined spaces with less than 16% oxygen needed to sustain life, skin and /or eye contact (liquid).

Symptoms: Include dizziness, headache, confusion, excitation, vomiting, asphyxia, liquid frostbite.

12. ECOLOGICAL INFORMATION

Toxicity:

Harmful to aquatic life.

Data for Component: Pentane (109-66-0):

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50 Fish 1	9.87 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	9.74 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	11.59 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

Persistence and Degradation: Not available

Bioaccumulative Potential:

Ethane (74-84-0)	
Log Kow	1.8
Propane (74-98-6)	
Log Kow	2.3
Butane (106-97-8)	
Log Kow	2.8
Pentane (109-66-0)	
Log Kow	3.39

Mobility in Soil: Not available

Other Adverse Effects: None

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

This product is a gas and typically would not be managed as a waste. If necessary, allow to dissipate to the atmosphere (if permitted by federal/provincial/municipal requirements). Dispose in a safe location, preferably by burning with a flare. If disposal of natural gas cannot be flared, care must be taken to ensure complete dissipation of the gas to a concentration below its flammable limits. Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	UN 1971
Proper Shipping Name	Natural Gas, compressed
Hazard Class and Packing Group	2.1
Shipping Label	Flammable Gas
Placard / Bulk Package	Flammable Gas / 1971
Emergency Response Guidebook Guide Number	115

IATA Cargo

UN Identification Number	UN 1971
Proper Shipping Name	Natural Gas, compressed
Hazard Class and Packing Group	2.1
ICA Label	NA
Packing Instructions Cargo	Forbidden
Emergency Response Guidebook Guide Number	150 kg

IATA Passenger

UN Identification Number	UN1971
Shipping Name / Description	Natural Gas, compressed
Hazard Class and Packing Group	2.1
ICAO Label	NA
Packing Instructions	Forbidden
Max Quantity per Package	150 kg

IMDG

UN Identification Number	UN1971
Shipping Name / Description	Natural Gas, compressed
Hazard Class and Packing Group	2.1
IMDG Label	P200
EmS Number	F-D, S-U
Marine Pollutant	No

If this product is placed into pressurized containers and offered for shipment, please refer to 49 CFR 171.306 and 171.302 for appropriate regulatory information.

Natural Gas (Pipeline Quality) Special Shipping Information:

Handle as extremely flammable gas. Electrically ground/bond during transfer to eliminate static accumulation.

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	Yes
Simple asphyxiant	

Clean Water Act (Oil Spills)

Any spill or release of this product to "navigable waters" (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts this material. This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304.

SARA Section 313- Supplier Notification

This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

Pennsylvania Right to Know Hazardous Substance list:

The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Methane	74-82-8	97-100%
Ethane	74-84-0	0-3%
Propane	74-98-6	0-3%
Butane	106-97-8	0-3%
Pentane	109-66-0	0-3%

New Jersey Right to Know Hazardous Substance list:

The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Methane	74-82-8	97-100%
Ethane	74-84-0	0-3%
Propane	74-98-6	0-3%
Butane	106-97-8	0-3%
Pentane	109-66-0	0-3%

California Proposition 65

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

U.S. Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)

Class A - Compressed Gas
Class B1 - Flammable Gases

16. OTHER INFORMATION

Version 2
Issue Date May 20, 2016
Prior Issue Date February 11, 2015

Description of Revisions

Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

°F	Degrees Fahrenheit (temperature)	mL	Milliliter
<	Less than	mm ²	Square millimeters
=	Equal to	mmHg	Millimeters of mercury (pressure)
>	Greater than	N/A	Not applicable
AP	Approximately	N/D	Not determined
C	Centigrade (temperature)	ppm	Parts per million
kg	Kilogram	sec	Second
L	Liter	ug	Micrograms
mg	Milligrams		

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
AIHA	American Industrial Hygiene Association	OPA	Oil Pollution Act of 1990
AL	Action Level	OSHA	U.S. Occupational Safety & Health Administration
ANSI	American National Standards Institute	PEL	Permissible Exposure Limit (OSHA)
API	American Petroleum Institute	RCRA	Resource Conservation and Recovery Act
CAS	Chemical Abstract Service	REL	Recommended Exposure Limit (NIOSH)
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act	RVP	Reid Vapor Pressure
DOT	U.S. Department of Transportation	SA	Simple Asphyxiant
EC50	Ecological concentration 50%	SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
EPA	U.S. Environmental Protection Agency	SCBA	Self Contained Breathing Apparatus
ERPG	Emergency Response Planning Guideline	SPCC	Spill Prevention, Control, and Countermeasures
GHS	Global Harmonized System	STEL	Short Term Exposure Limit (generally 15 minutes)
HMIS	Hazardous Materials Information System	TLV	Threshold Limit Value (ACGIH)
IARC	International Agency for Research On Cancer	TSCA	Toxic Substances Control Act
IATA	International Air Transport Association	TWA	Time Weighted Average (8 hr.)
IMDG	International Maritime Dangerous Goods	UN	United Nations
Koc	Soil Organic Carbon	UNECE	United Nations Economic Commission for Europe
LC50	Lethal concentration 50%	WEEL	Workplace Environmental Exposure Level (AIHA)
LD50	Lethal dose 50%	WHMIS	Canadian Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		
NFPA	National Fire Protection Association		
NIOSH	National Institute of Occupational Safety and Health		
NOIC	Notice of Intended Change		

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

**** End of Safety Data Sheet ****