

SAFETY DATA SHEET

SDS ID NO.: 0104MAR022

Revision date 05/08/2020

1. IDENTIFICATION

Product Name MarkWest Propane

Synonym Propane; Propane HD-5, Liquefied Petroleum Gas; LPG
Product code 0104MAR022
Chemical family Hydrocarbon Gas

Recommended use Hydrocarbon.
Restrictions on use All others.

Manufacturer, Importer, or Responsible Party Name and Address
MarkWest Energy Partners, L.P.
a subsidiary of MPLX LP
1515 Arapahoe Street
Tower 1, Suite 1600
Denver, Colorado 80202

SDS Information 1-419-421-3070 (M-F; 8-5 EST)

24 Hour Emergency Telephone CHEMTREC: 1-800-424-9300

2. HAZARD IDENTIFICATION

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Classification

Flammable gases	Category 1
Gases under pressure	Liquefied Gas
Simple asphyxiant	-
Specific target organ toxicity (single exposure)	Category 3

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid
Liquid product may cause freeze burn

Label Elements

Danger

Extremely flammable gas
Contains gas under pressure; may explode if heated
May accumulate electrostatic charge and ignite or explode
May displace oxygen and cause rapid suffocation
May cause drowsiness or dizziness
Contact with liquid product may cause freeze burn.

**Appearance** Colorless Liquefied Gas**Physical State** Gas**Odor** Odorless to rotten cabbage odor**Precautionary Statements - Prevention**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Avoid breathing gas/vapors
 Use only outdoors or in a well-ventilated area

Precautionary Statements - Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely
 Eliminate all ignition sources if safe to do so
 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 Call a poison center or doctor if you feel unwell

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition Information

Name	CAS Number	% Concentration
Propane	74-98-6	93-100
Ethane	74-84-0	0-5
Isobutane	75-28-5	0-2

All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First aid measures**General advice**

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation

Remove to fresh air. If not breathing, utilize bag valve mask or other form of barrier device to institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Get immediate medical attention.

Skin contact

If liquefied product has caused frostbite, remove contaminated clothing. Thaw frost bitten areas slowly with lukewarm water or by wrapping affected areas with blankets. Do not rub affected areas. Let circulation reestablish itself naturally, exercising area if possible. Get immediate medical attention.

Eye contact

Flush with large amounts of tepid water for at least 15 minutes. Gently remove contact lenses while flushing. Eyelids should be held away from the eyeball to ensure thorough rinsing. If frostbite is suspected (cloudy lens or greyish white tissue around the eye) get

immediate medical attention.

Ingestion Ingestion not likely. If swallowed, immediately call a poison control center or physician.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse effects Asphyxiant gas. High concentrations in the immediate area can displace oxygen causing the feeling of suffocation and can cause headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue from oxygen deprivation. Contact with product may cause frostbite.

Indication of any immediate medical attention and special treatment needed

Notes to physician This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided. Treat symptomatically. Administer supplemental oxygen as needed.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media For small fires, Class B fire extinguishing media such as CO₂ or dry chemical can be used. For large fires use water spray or fog. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Specific hazards arising from the chemical This product has been determined to be an extremely flammable gas per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Sealed containers may rupture when heated. A phenomena known as boiling liquid expanding vapor explosions (BLEVE) can occur when a liquid in a pressurized container comes in close proximity to a fire and reaches a temperature well above its boiling point. A catastrophic failure of the vessel can occur, resulting in flying equipment fragments, a shock wave and a fireball causing serious damage and death. For additional fire related information see NFPA 30 or the Emergency Response Guidebook 115.

Hazardous combustion products Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to mechanical impact: No.
Sensitivity to static discharge: Yes.

Special protective equipment and precautions for firefighters Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Isolate hazard area. If safe to do so, stop the flow of gas and allow fire to burn out. Extinguishing the flame before shutting off the supply can cause the formation of explosive mixtures. In some cases it may be preferred to allow the flame to continue to burn. Use extreme caution when fighting liquefied petroleum gas fires. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Avoid use of solid water streams. Contact with water and liquefied product can cause increased vaporization.

Additional firefighting tactics FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car

or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.

NFPA Health 1 Flammability 4 Instability 0 Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Keep people away from and upwind of spill/leak. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Use spark-proof tools and explosion-proof equipment. Leaks may self-ignite due to static accumulation. Distant ignition and flashback are possible. Monitor area for flammable or explosive atmosphere. Before entry, especially into confined areas, check atmosphere with an appropriate monitor.
Protective equipment	Use personal protection measures as recommended in Section 8.
Emergency procedures	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental precautions	If leaking, take appropriate steps to disperse gas.
Methods and materials for containment	Prevent further leakage or spillage if safe to do so.
Methods and materials for cleaning up	Shut off gas supply, if safe to do so. Allow equipment to depressurize. Isolate area until gas has dispersed.

7. HANDLING AND STORAGE

Safe handling precautions	<p>Avoid breathing fumes, gas, or vapors. Use only outdoors or with adequate ventilation. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Gas may accumulate along the ground, settle in low lying areas or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback may occur along vapor trails. Use only non-sparking tools. Use appropriate grounding and bonding practices. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Use personal protection recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements.</p> <p>Components of this product are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering or pumping at high flow rates. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources.</p>
Storage conditions	Product is stored as a liquid but used in the gaseous state. Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Keep product and empty container away from heat and sources of ignition. Do not puncture or incinerate container.
Incompatible materials	Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Name	ACGIH TLV	OSHA PELs	NIOSH IDLH
Propane 74-98-6	Simple asphyxiant	TWA: 1000 ppm TWA: 1800 mg/m ³	2100 ppm
Ethane 74-84-0	Simple asphyxiant	-	-
Isobutane 75-28-5	1000 ppm STEL	-	-

Notes: No further information available.

Engineering measures Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof. Monitor atmospheric oxygen levels.

Personal protective equipment

Eye protection Goggles or faceshield may be needed when handling pressurized gases.

Skin and body protection Wear insulated gloves when handling pressurized gases to prevent skin contact and frostbite or freeze burn. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection Use atmosphere supplying respirators in the event of oxygen deficiency, when material produces vapors that exceed permissible limits, or when excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134.

Note: Air purifying respirators are not to be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturers instructions), in oxygen deficient atmospheres, (less than 19.5% oxygen) or under conditions that are immediately dangerous to life and health (IDLH).

Hygiene measures Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Do not smoke while handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance Colorless Liquefied Gas
Physical State Gas
Color Colorless
Odor Odorless to rotten cabbage odor
Odor Threshold No data available.

<u>Property</u>	<u>Values (method)</u>
pH	Not applicable
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	-42 °C / -44 °F
Flash Point	-104 °C / -156 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Extremely flammable gas
Flammability Limit in Air (%):	
Upper Flammability Limit:	9.5
Lower Flammability Limit:	2.1
Explosion Limits	No data available.
Vapor Pressure	123.5 psi @ 21°C
Vapor Density	1.6
Specific Gravity / Relative Density	0.5
Water Solubility	No data available.
Partition Coefficient	No data available.
Autoignition Temperature	450 °C / 842 °F
Decomposition Temperature	No data available.

Kinematic Viscosity	No data available.
VOC Content (%)	No data available.
Density	4.2 lbs/gal

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F (21°C), 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Does not polymerize except under special conditions (extreme temperatures, pressure, oxidizers).
Conditions to avoid	Sources of heat or ignition.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. In high concentration the gas may cause suffocation. Victim may not be aware of asphyxiation.
Eye contact	Gas or vapor is generally non-irritating to eyes. Direct contact with liquefied product can cause freeze burn or frostbite.
Skin contact	Gas or vapor is generally non-irritating to skin. Direct contact with liquefied product can cause freeze burn or frostbite.
Ingestion	Ingestion not likely.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Propane 74-98-6	-	-	> 1,464 mg/L (Rat) 15 min
Ethane 74-84-0	-	-	658 mg/L (Rat) 4 h
Isobutane 75-28-5	-	-	570,000 ppm (Rat) 15 min

Delayed and immediate effects as well as chronic effects from short and long-term exposure

PROPANE and BUTANE: Laboratory animal studies indicate exposure to extremely high levels (1 to 10 vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

ETHANE: Exposure to high levels produces weak central nervous system (CNS) depressant effects without significant potential for systemic toxicity. At very high levels can act as asphyxiant gas by diluting and displacing oxygen. Symptoms of persons exposed to oxygen deficient atmospheres include headache, dizziness, incoordination, cyanosis and narcosis. Extremely high concentrations can produce unconsciousness followed by death.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and symptoms	Asphyxiant gas. High concentrations in the immediate area can displace oxygen causing the feeling of suffocation and can cause headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue from oxygen deprivation. Contact with product may
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	cause frostbite.
Acute toxicity	None known.
Skin corrosion/irritation	None known.
Serious eye damage/eye irritation	None known.
Sensitization	None known.
Mutagenic effects	None known.
Carcinogenicity	None known.
Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	May cause drowsiness or dizziness.
Specific Target Organ Toxicity (STOT) - repeated exposure	None known.
Aspiration hazard	Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Not classified in terms of aquatic toxicity.
Persistence and degradability	Expected to be inherently biodegradable.
Bioaccumulation	Not expected to bioaccumulate in aquatic organisms.
Mobility in soil	Expected to rapidly partition to air.
Other adverse effects	No information available.

13. DISPOSAL CONSIDERATIONS

Description of waste residues	No information available.
Safe handling of wastes	Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.
Disposal of wastes / methods of disposal	The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.
Contaminated packaging disposal	Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT

UN/Identification No:	UN 1978
UN Proper Shipping Name:	Propane
Transport Hazard Class(es):	2.1
Packing Group:	Not applicable

NOTE: UN1075 may be substituted for the UN number shown above for domestic transport, as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.

IATA

UN/Identification No:	UN 1978
UN Proper Shipping Name:	Propane
Transport Hazard Class(es):	2.1
Packing Group:	Not applicable
ERG code:	10L

IMDG

UN/Identification No:	UN 1978
UN Proper Shipping Name:	Propane
Transport Hazard Class(es):	2.1
Packing Group:	Not applicable
EmS No:	F-D, S-U
Marine Pollutant:	No

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. REGULATORY INFORMATION

Regulatory Information

US TSCA Chemical Inventory This product and/or its components are listed on the TSCA Chemical Inventory or are exempt.

Canada DSL/NDSL Inventory This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

EPA Superfund Amendment & Reauthorization Act (SARA)

SARA Section 302 This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List above the de minimis threshold.

SARA Section 304 This product does not contain any component(s) identified as an EHS or a CERCLA Hazardous substance above the de minimis threshold.

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

Flammable
Gas under pressure
Hazard Not Otherwise Classified (HNOC)-Physical
Simple asphyxiant
Specific target organ toxicity
Hazard Not Otherwise Classified (HNOC)-Health

SARA Section 313 This product does not contain components, which if in exceedance of the de minimis threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

U.S. State Regulations

California Proposition 65 Chemicals known to the State of California to cause cancer, birth defects or other reproductive harm are created by the combustion of propane.

For more information, go to www.P65Warnings.ca.gov.

State Right-To-Know Regulations The following component(s) of this material are identified on the regulatory lists below:

Name	New Jersey Right-To-Know	Pennsylvania Right-To-Know	Massachusetts Right-To-Know
Propane 74-98-6	Listed	Listed	Listed
Ethane 74-84-0	Listed	Listed	Listed
Isobutane 75-28-5	Listed	Listed	Listed

16. OTHER INFORMATION

Prepared by Toxicology & Product Safety

NFPA



Revision Notes

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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NOTE: Naturally Occurring Radioactive Material (NORM), i.e. gases and particles, are found in trace amounts in crude oil and some derived products. Worker risks from NORM can be minimized by determining where NORM is present and controlling the handling of NORM contaminated wastes and processing, transport or storage equipment (e.g. lines, filters, pumps and reaction units) in compliance with OSHA's Standard on Ionizing Radiation 29CFR 1910.1096. During the processing of crude oil and certain petroleum products, NORM may accumulate in sediments, scales and sludge found in processing equipment (e.g. lines, filters, pumps and reaction units), and consequently may present an inhalation or ingestion hazard. For additional information on managing NORM, please refer to API's Bulletin E2 entitled, "Bulletin on Management of Naturally Occurring Radioactive Material in Oil and Gas Production".