

SAFETY DATA SHEET

SDS ID NO.: 0106MAR022
Revision Date: 10/08/2019

1. IDENTIFICATION

Product Name: MarkWest Carbon Dioxide
Synonym: Carbon dioxide
Product Code: 0106MAR022
Chemical Family: Carbon Gas
Recommended Use: Fuel.
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)
Emergency Telephone: CHEMTREC: 1-800-424-9300

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status

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

Gases under pressure	Compressed Gas
Simple asphyxiant	-

Hazards Not Otherwise Classified (HNOC)

Not applicable.

Label elements

EMERGENCY OVERVIEW

Warning

Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation



Appearance Colorless Gas

Physical State Gas

Odor Odorless

Precautionary Statements - Prevention

Not applicable.

Precautionary Statements - Response

Not applicable.

Precautionary Statements - Storage

Protect from sunlight. Store in a well-ventilated place

Precautionary Statements - Disposal

Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition Information:

Name	CAS Number	% Concentration
Carbon Dioxide	124-38-9	93-98
Nitrogen	7727-37-9	1-6
Ethane	74-84-0	0-1

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:** Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention.
- Eye Contact:** Immediately flush eyes with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.
- 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.

Indication of any immediate medical attention and special treatment needed

- Notes To Physician:** 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, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. 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

Sealed containers may rupture when heated. For additional fire related information see NFPA 30 or the Emergency Response Guidebook 120.

Hazardous combustion products

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

Explosion data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

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. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material.

Additional firefighting tactics

Not applicable.

NFPA

Health 1

Flammability 0

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. 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:

Leaking containers should be moved outdoors or to well-ventilated area and contents transferred to a suitable container. Vapors may accumulate in confined spaces without sufficient ventilation. 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:

Avoid breathing fumes, gas, or vapors. Use only outdoors or with adequate ventilation. Use personal protection recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements.

Storage Conditions:

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

Name	ACGIH TLV	OSHA PELs:	NIOSH IDLH
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Carbon Dioxide 124-38-9	5000 ppm TWA 30000 ppm STEL	TWA: 5000 ppm TWA: 9000 mg/m ³	40000 ppm
Nitrogen 7727-37-9	Simple asphyxiant	-	-
Ethane 74-84-0	Simple asphyxiant	-	-

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 appropriate protective gloves to prevent skin contact. 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 gases and/or vapors that exceed permissible limits, or when excessive gases and/or vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

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

Physical State	Gas
Appearance	Colorless Gas
Color	Colorless
Odor	Odorless
Odor Threshold	No data available.

<u>Property</u>	<u>Values (Method)</u>
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	No data available.
Flash Point	No data available.
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	No data available.
Lower Flammability Limit:	No data available.
Explosion limits:	No data available.
Vapor Pressure	No data available.
Vapor Density	No data available.
Specific Gravity / Relative Density	No data available.
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	No data available.
Decomposition temperature	No data available.
pH:	Not applicable.
Autoignition Temperature	No data available.

Kinematic Viscosity	No data available.
Dynamic Viscosity	No data available.
Explosive Properties	No data available.
VOC Content (%)	No data available.
Density	No data available.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	The material is stable at 70°F (21°C), 760 mmHg pressure.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible Materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	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.
Skin contact	Gas or vapor is generally non-irritating to skin.
Ingestion	Ingestion not likely.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon Dioxide 124-38-9	-	-	-
Nitrogen 7727-37-9	-	-	-
Ethane 74-84-0	-	-	658 mg/L (Rat) 4 h

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

CARBON DIOXIDE: Carbon dioxide is a simple asphyxiant and has no warning properties (such as odor). Inhalation of high concentrations can produce mild narcotic effects and stimulation of the respiratory centers. Eye, nose and throat irritation can occur at very high exposure concentrations. Poisoning may affect the lungs, heart, kidney and central nervous system. Sleepiness, mental confusion, giddiness, lassitude (weakness), noise in the ear, weakened reflexes, tremors, flaccid paralysis, coma, and death may all occur from carbon dioxide poisoning.

NITROGEN: Nitrogen is a simple asphyxiant gas without significant potential for systemic toxicity. At very high concentrations, it acts as an 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.

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.
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.

Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Carbon Dioxide 124-38-9	Not Listed	Not Listed	Not Listed	Not Listed
Nitrogen 7727-37-9	Not Listed	Not Listed	Not Listed	Not Listed
Ethane 74-84-0	Not Listed	Not Listed	Not Listed	Not Listed

Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	None known.
Specific Target Organ Toxicity (STOT) - repeated exposure	None known.
Aspiration hazard	Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity Not classified in terms of aquatic toxicity.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Carbon Dioxide 124-38-9	-	-	-	-
Nitrogen 7727-37-9	-	-	-	-
Ethane 74-84-0	-	-	-	-

Persistence and degradability No information available.

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.

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.

Methods of Contaminated Packaging Disposal

Empty containers should be completely drained and then discarded or recycled, if possible. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT:

UN Proper Shipping Name: Carbon Dioxide
UN/Identification No: UN 1013
Class: 2.2
Packing Group: Not applicable.

IATA:

UN Proper Shipping Name: Carbon Dioxide
UN/Identification No: UN 1013
Transport Hazard Class(es): 2.2
Packing Group: Not applicable.
ERG code: 2L

IMDG:

UN Proper Shipping Name: Carbon Dioxide
UN/Identification No: UN 1013
Transport Hazard Class(es): 2.2
Packing Group: Not applicable.
EmS No: F-C, S-V
Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory 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.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Carbon Dioxide	NA
Nitrogen	NA
Ethane	NA

SARA Section 304: This product does not contain any component(s) identified as an EHS or a CERCLA Hazardous substance, which in case of a spill or release may be subject to SARA reporting requirements.

Name	Hazardous Substances RQs
Carbon Dioxide	NA
Nitrogen	NA
Ethane	NA

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

Gas under pressure
Simple asphyxiant

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

Name	CERCLA/SARA 313 Emission reporting:
Carbon Dioxide	None
Nitrogen	None
Ethane	None

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

Carbon Dioxide

- Louisiana Right-To-Know: Not Listed
- California Proposition 65: Not Listed
- New Jersey Right-To-Know: SN 0343
- Pennsylvania Right-To-Know: Present
- Massachusetts Right-To Know: Present
- Florida Substance List: Not Listed
- Rhode Island Right-To-Know: Toxic
- Michigan Critical Materials Register List: Not Listed
- Massachusetts Extraordinarily Hazardous Substances: Not Listed
- California - Regulated Carcinogens: Not Listed
- Pennsylvania RTK - Special Hazardous Substances: Not Listed
- New Jersey - Special Hazardous Substances: Not Listed
- New Jersey - Environmental Hazardous Substances List: Not Listed
- Illinois - Toxic Air Contaminants: Not Listed
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed

Nitrogen

- Louisiana Right-To-Know: Not Listed
- California Proposition 65: Not Listed
- New Jersey Right-To-Know: SN 1375
- Pennsylvania Right-To-Know: Present
- Massachusetts Right-To Know: Present
- Florida Substance List: Not Listed
- Rhode Island Right-To-Know: Flammable
- Michigan Critical Materials Register List: Not Listed
- Massachusetts Extraordinarily Hazardous Substances: Not Listed
- California - Regulated Carcinogens: Not Listed
- Pennsylvania RTK - Special Hazardous Substances: Not Listed
- New Jersey - Special Hazardous Substances: Not Listed
- New Jersey - Environmental Hazardous Substances List: Not Listed
- Illinois - Toxic Air Contaminants: Not Listed
- New York - Reporting of Releases Part 597 -

List of Hazardous Substances:

Ethane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0834
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 0834 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

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

Notes: Not applicable.

16. OTHER INFORMATION

Prepared By Toxicology & Product Safety

Revision Notes

Revision Date: 10/08/2019

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.