



Section 1: Identification

Product identifier

Product Name • Ethylene

Synonyms • Ethylene, ethene, elayl, etherine, LPG

Relevant identified uses of the substance or mixture and uses advised against

Recommended use • Chemical Manufacture

Details of the supplier of the safety data sheet

Manufacturer • Westlake Chemical OpCo LP
P.O Box 527
2468 Industrial Parkway Calvert City, KY 42029
United States

Telephone (General) • 270-395-3151

Emergency telephone number

Manufacturer • 800-424-9300 - Chemtrec – Transportation Emergency

Manufacturer • 270-395-4151

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Flammable Gases 1
Liquefied Gas
Simple Asphyxiant

Label elements

OSHA HCS 2012

DANGER



Hazard statements • Extremely flammable gas
Contains gas under pressure; may explode if heated
May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention • Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.

Response • Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.

Storage/Disposal • Store in a well-ventilated place.

Other hazards

OSHA HCS 2012 • Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

Classification of the substance or mixture

WHMIS • Compressed Gas - A
Flammable Gases - B1
Other Toxic Effects - D2B

Label elements

WHMIS



• Compressed Gas - A
Flammable Gases - B1
Other Toxic Effects - D2B

Other hazards

WHMIS • Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Ethylene	CAS:74-85-1	90% TO 100%	NDA	OSHA HCS 2012: Flam. Gas 1; Simp. Asphyx.; Press. Gas; STOT SE 3: Narc.	NDA
Methane	CAS:74-82-8	0% TO 6.5%	Inhalation-Mouse LC50 • 326 g/m ³ 2 Hour(s)	OSHA HCS 2012: Flam. Gas 1; Press. Gas; Simp. Asphyx.	NDA

Ethane	CAS:74-84-0	0% TO 3.5%	NDA	OSHA HCS 2012: Flam. Gas 1; Press Gas, Simp. Asphyx.	NDA
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Section 4: First-Aid Measures

Description of first aid measures

- Inhalation** • IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Get medical attention immediately.
- Skin** • If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.
- Eye** • If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Ingestion** • If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

- Notes to Physician** • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures

Extinguishing media

- Suitable Extinguishing Media** • SMALL FIRES: Dry chemical or CO₂.
LARGE FIRES: Water spray or fog.

- Unsuitable Extinguishing Media** • No data available

Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • EXTREMELY FLAMMABLE
Will form explosive mixtures with air.
Vapors may travel to source of ignition and flash back.
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.

- Hazardous Combustion Products** • No data available

Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Wear positive pressure self-contained breathing apparatus (SCBA).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
Move containers from fire area if you can do it without risk.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
 FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.
 FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
 FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
 FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
 FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
 FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

- Personal Precautions** • Ventilate the area before entry. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Emergency Procedures** • ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile)

Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

- Containment/Clean-up Measures** • Stop leak if you can do it without risk.
 All equipment used when handling the product must be grounded.
 If possible, turn leaking containers so that gas escapes rather than liquid.
 Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
 Do not direct water at spill or source of leak.
 Isolate area until gas has dispersed.

Section 7 - Handling and Storage

Precautions for safe handling

- Handling** • Keep away from heat and ignition sources – No Smoking. Use only with adequate ventilation. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposure to a fatal concentration of this material could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Take precautionary measures against static charges. Use only non-sparking tools. All equipment used when handling the product must be grounded. Wear appropriate personal protective equipment, avoid direct contact.

Conditions for safe storage, including any incompatibilities

- Storage** • Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines		
	Result	ACGIH
Ethane (74-84-0)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)
Methane (74-82-8)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)
Ethylene (74-85-1)	TWAs	200 ppm TWA

Exposure controls

Engineering

Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

Personal Protective Equipment

Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

Skin/Body

- Wear appropriate gloves.

Environmental

Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	No data available
Color	Colorless	Odor	Slightly sweet olefin odor.
Odor Threshold	No data available		
General Properties			
Boiling Point	-103.7 C(-154.66 F)	Melting Point	No data available
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	= 0.57 @ -104 C(-155.2 F) Water=1	Water Solubility	Negligible
Viscosity	No data available		
Volatility			
Vapor Pressure	600 psia @ 0 C(32 F)	Vapor Density	0.98 Air=1
Evaporation Rate	No data available	VOC (Wt.)	100 %
Flammability			
Flash Point	-181 C(-293.8 F) Approximately	UEL	36 %
LEL	2.7 %	Autoignition	840 F(448.8889 C)
Flammability (solid, gas)	Flammable Gas.		

Environmental			
Octanol/Water Partition coefficient	No data available		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- Excess heat, sparks, open flame.

Incompatible materials

- Contact with aluminum chloride, benzoyl peroxide and carbon tetrachloride, bromotrichloromethane, chlorine, chlorine dioxide, nitrogen dioxide, ozone and oxidizing agents can result in violent reactions including high heat, pressure, and explosion depending on the amount and specific materials involved. Ethylene is spontaneously explosive with chlorine in sunlight.

Hazardous decomposition products

- Carbon monoxide, carbon dioxide and small amounts of aromatic and aliphatic hydrocarbons.

Section 11 - Toxicological Information

Information on toxicological effects

Components		
Ethylene (90% TO 100%)	74-85-1	Acute Toxicity: Inhalation-Mouse LC50 • 95 ppm 2 Hour(s); Inhalation-Mouse TCLo • 350000 mg/m ³ 2 Hour(s); <i>Behavioral:</i> General anesthetic
Methane (0% TO 6.5%)	74-82-8	Acute Toxicity: Inhalation-Mouse LC50 • 326 g/m ³ 2 Hour(s)

GHS Properties	Classification
Acute toxicity	OSHA HCS 2012•No data available
Aspiration Hazard	OSHA HCS 2012•No data available
Carcinogenicity	OSHA HCS 2012•No data available
Germ Cell Mutagenicity	OSHA HCS 2012•No data available
Skin corrosion/Irritation	OSHA HCS 2012•No data available
Skin sensitization	OSHA HCS 2012•No data available
STOT-RE	OSHA HCS 2012•No data available
STOT-SE	OSHA HCS 2012•No data available
Toxicity for Reproduction	OSHA HCS 2012•No data available
Respiratory sensitization	OSHA HCS 2012•No data available
Serious eye damage/Irritation	OSHA HCS 2012•No data available

Potential Health Effects

Inhalation

Acute (Immediate)

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

Chronic (Delayed)

- No data available

Skin

Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

Chronic (Delayed)

- No data available

Eye

Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

Chronic (Delayed)

- No data available

Ingestion

Acute (Immediate)

- Ingestion can cause burns similar to frostbite.

Chronic (Delayed)

- No data available

Key to abbreviations

LC = Lethal Concentration

TC = Toxic Concentration

Section 12 - Ecological Information

Toxicity

- Material data lacking.

Persistence and degradability

- Material data lacking.

Bioaccumulative potential

- Material data lacking.

Mobility in Soil

- Material data lacking.

Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

Waste treatment methods

- Product waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
- Packaging waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN1962	Ethylene	2.1	NDA	NDA
TDG	UN1962	ETHYLENE, COMPRESSED	2.1	NDA	NDA

- Special precautions for user** • Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** • Not relevant.

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

- Acute, Fire, Pressure(Sudden Release of)

Inventory				
Component	CAS	Canada DSL	Canada NDSL	TSCA
Ethane	74-84-0	Yes	No	Yes
Ethylene	74-85-1	Yes	No	Yes
Methane	74-82-8	Yes	No	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

•Ethylene	74-85-1	A, B1, D2B
•Ethane	74-84-0	A, B1
•Methane	74-82-8	A, B1

Canada - WHMIS - Ingredient Disclosure List

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

Environment

Canada - CEPA - Priority Substances List

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

Environment**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CAA (Clean Air Act) - Class I Ozone Depletors

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CAA (Clean Air Act) - Class II Ozone Depletors

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

•Ethylene	74-85-1	1.0 % de minimis concentration
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
•Ethylene	74-85-1	Not Listed
•Ethane	74-84-0	Not Listed
•Methane	74-82-8	Not Listed

Section 16 - Other Information

Last Revision Date	<ul style="list-style-type: none"> • 15/May/2015
Preparation Date	<ul style="list-style-type: none"> • 15/May/2015
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Key to abbreviations

NDA = No data available