

ETHYLENE



Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Version: 1.1 Revision Date: 05/21/2015

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

Product Identifier

Product Form: Substance

Product Name: Ethylene

Synonyms: Ethene

CAS No. 74-85-1

Intended Use of the Product

Use of the Substance/Mixture: Industrial Use. Use as directed.

Name, Address, and Telephone of the Responsible Party

Company

Williams Olefins, L.L.C.
PO Box 470
Geismar, Louisiana 70734
T (225)-642-2100
ehs@williams.com

Emergency Telephone Number

Emergency number (888)253-4015, (225)642-2100; (800)424-9300 (CHEMTREC)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Simple Asphy

Flam. Gas 1 H220

Refrigerated liquefied gas H281

STOT SE 3 H336

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :



GHS02



GHS04



GHS04

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Signal Word (GHS-US)	: Danger
Hazard Statements (GHS-US)	: H220 - Extremely flammable gas H281 - Contains refrigerated gas; may cause cryogenic burns or injury H336 - May cause drowsiness or dizziness May displace oxygen and cause rapid suffocation
Precautionary Statements (GHS-US)	: P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking. P261 - Avoid breathing vapors, mist, spray, gas. P271 - Use only outdoors or in a well-ventilated area. P282 - Wear protective gloves, protective clothing, eye protection, face protection, respiratory protection. P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312 - Call a POISON CENTER/doctor/physician if you feel unwell. P315 - Get immediate medical advice and attention. P336 - Thaw frosted parts with lukewarm water. Do not rub affected area. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - Eliminate all ignition sources if safe to do so. P403 - Store in a well-ventilated place. P403+P233 - Store in a well-ventilated place. Keep container tightly closed. P405 - Store locked up. P501 - Dispose of contents/container to local, regional, national, territorial, provincial, and international regulations.

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Do not puncture or incinerate container. Contains gas under pressure; may explode if heated. Asphyxiant gas, can be fatal. This gas is odorless. May cause damage to the blood, central nervous system, and cardiovascular system. High concentrations of gas can cause unconsciousness and death. Being under the influence of alcohol may enhance the effects of this product.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance

NAME	PRODUCT IDENTIFIER	% (W/W)	CLASSIFICATION (GHS-US)
Ethylene	(CAS No) 74-85-1	100%	Simple Asphy Flam. Gas 1, H220 Refrigerated liquefied gas, H281 STOT SE 3, H336

Full text of H-phrases: see section 16

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SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation persists. Thaw frosted parts with lukewarm water. Do not rub affected area.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation persists

Ingestion: Rinse mouth. Do NOT induce vomiting. Get immediate medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

General: Contains refrigerated gas; may cause cryogenic burns or injury. Vapors may cause drowsiness and dizziness. Asphyxiant gas.

Inhalation: May cause drowsiness or dizziness. May cause respiratory irritation. Asphyxia by lack of oxygen: risk of death.

Skin Contact: May cause frostbite on contact with the liquefied gas.

Eye Contact: Contact with the liquefied gas causes frostbite. May cause eye irritation.

Ingestion: Not expected to be a primary route of exposure. Contact with the liquid causes frostbite.

Chronic Symptoms: Not available

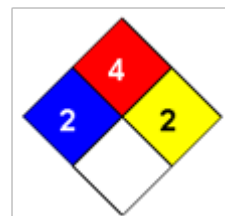
Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

SECTION 5: FIREFIGHTING MEASURES

NFPA 704 Hazard Class

Health: 2 Flammability: 4 Instability: 2



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire. Dry chemical, carbon dioxide, water spray, fog.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

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Special Hazards Arising From the Substance or Mixture

Fire Hazard: Extremely flammable gas

Explosion Hazard: May form flammable/explosive vapor-air mixture.

Reactivity: Hazardous polymerization may occur.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire

Firefighting Instructions: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

In case of leaking gas fire, eliminate all ignition sources if safe to do so.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Acrid vapors. Carbon oxides (CO, CO₂). Smoke.

Other information: Do not allow run-off from fire fighting to enter drains or water courses

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Use special care to avoid static electric charges. Eliminate every possible source of ignition. Keep away from heat/sparks/open flames/hot surfaces - No smoking. Avoid breathing (gas, vapor, mist, spray). Use only outdoors or in a well-ventilated area. Ruptured cylinders may rocket. May explode on heating. Avoid all contact with skin, eyes, or clothing.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

Methods and Material for Containment and Cleaning Up

For Containment: Stop the flow of material, if this is without risk.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Isolate area until gas has dispersed.

In case of fire: Stop leak if safe to do so.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection.

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SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Handle empty containers with care because residual vapors are flammable. Extremely flammable gas. When heated to decomposition, emits toxic fumes. Flammable gas. Hazardous polymerization will not occur. Do not pressurize, cut, or weld containers.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Proper grounding procedures to avoid static electricity should be followed. Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep in fireproof place. Store in a well-ventilated place. Keep container tightly closed. Keep/Store away from extremely high or low temperatures, ignition sources, direct sunlight, incompatible materials. Store in original container.

Incompatible Materials: Strong oxidizers, strong acids, strong bases, halogens, chlorine.

Specific End Use(s) Not available

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

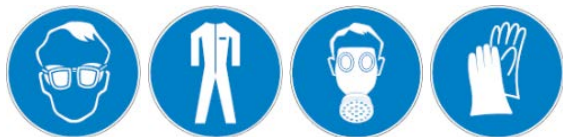
Chemical Name	ACGIH	OSHA	Other
Ethylene (74-85-1)	TWA: 200 ppm	Sect. 1926.55 Simple asphyxiant	--

Note: State province, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Exposure Controls

Appropriate Engineering Controls: Gas detectors should be used when flammable gases/vapours may be released. Ensure adequate ventilation, especially in confined areas. Proper grounding procedures to avoid static electricity should be followed. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment.

Personal Protective Equipment: Protective goggles. Protective clothing. Respiratory protection of the dependent type. Insulated gloves.



Materials for Protective Clothing: Chemically resistant materials and fabrics. Wear fire/flammable resistant/retardant clothing.

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Hand Protection: Wear chemically resistant protective gloves. Insulated gloves

Eye Protection: Chemical goggles or safety glasses.

Skin and Body Protection: Wear appropriate protective clothing.

Respiratory Protection: In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear a self contained breathing apparatus (SCBA).

Thermal Hazard Protection: Wear suitable protective clothing.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	: Gas
Appearance	: Colorless gas @ s.t.p.
Odor	: Faint, sweet
Odor Threshold	: Not available
pH	: Not available
Relative Evaporation Rate (butylacetate=1)	: Not available
Melting Point	: -169.4 °C (-272.9°F)
Freezing Point	: Not available
Boiling Point	: -103.7 °C (-154.6°F)
Flash Point	: -120.56 °C (-185°F)
Auto-ignition Temperature	: 450 °C (842 °F)
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: 2.7 % (Explosive limit)
Upper Flammable Limit	: 36.0 % (Explosive limit)
Vapor Pressure	: 40 atm @1.5°C (34.7°F)
Relative Vapor Density at 20 °C	: 0.978 (air=1)
Relative Density	: Not available
Specific Gravity	: 0.574 @-103.33°C (-154°F)
Solubility	: 25.6% by volume in water @0°C (32°F)
Log Pow	: Not available
Log Kow	: Not available
Viscosity, Kinematic	: Not available

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Viscosity, Dynamic

Explosion Data – Sensitivity to Mechanical Impact : Not available

Explosion Data – Sensitivity to Static Discharge : Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous polymerization may occur.

Chemical Stability: Extremely flammable gas.

Possibility of Hazardous Reactions: Hazardous polymerization may occur.

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks. Incompatible materials. Avoid ignition sources.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Halogens. Halogenated compounds. Chlorine.

Hazardous Decomposition Products: Carbon oxides (CO, CO₂). Irritating fumes. Decomposition may be explosive. Acrid vapors. Smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

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: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness.

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: May cause drowsiness or dizziness. May cause respiratory irritation. Asphyxia by lack of oxygen: risk of death.

Symptoms/Injuries after Skin Contact: May cause frostbite on contact with the liquefied gas.

Symptoms/Injuries after Eye Contact: Contact with the liquefied gas causes frostbite. May cause eye irritation.

Symptoms/Injuries after Ingestion: Not expected to be a primary route of exposure. Contact with the liquid causes frostbite.

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Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data

ETHYLENE (74-85-1)	
IARC Group	3

SECTION 12: ECOLOGICAL INFORMATION

GHS Classification:

No classified hazards

Toxicity: Not classified

Persistence and Degradability

ETHYLENE	
Persistence and Degradability	Not established

Bioaccumulative Potential

ETHYLENE	
Bioaccumulative Potential	Not established

ETHYLENE (74-85-1)	
BCF fish 1	4 - 4.6
Log Pow	0.053

Mobility in Soil Not available

Other Adverse Effects

Other adverse effects: Liquid may cause freeze damage to the environment.

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Handle empty containers with care because residual vapors are flammable. Ruptured cylinders may rocket. Empty gas cylinders should be returned to the vendor for recycling or refilling.

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SECTION 14: TRANSPORT INFORMATION

UN Number

UN-No.(DOT): 1962

DOT NA no.: 1962

UN Proper Shipping Name

DOT Proper Shipping Name : UN 1962 Ethylene, 2.1

Hazard Labels (DOT) : 2.1 - Flammable gases



DOT Special Provisions (49 CFR 172.102) : None listed

DOT Packaging Exceptions (49 CFR 173.xxx) : 306

DOT Packaging Non Bulk (49 CFR 173.xxx) : 304

DOT Packaging Bulk (49 CFR 173.xxx) : 302

Additional Information

Emergency Response Guide (ERG) Number : 116P

Transport by sea

DOT Vessel Stowage Location : E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Air transport

DOT Quantity Limitations Passenger Aircraft/Rail (49 CFR 173.27) : Forbidden

DOT Quantity Limitations Cargo Aircraft Only (49 CFR 175.75) : 150 kg

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

ETHYLENE	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Reactive hazard Immediate (acute) health hazard Fire hazard


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ETHYLENE (74-85-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 313 - Emission Reporting	1.0 %

Canadian Regulations

ETHYLENE	
WHMIS Classification	Class B Division 1 - Flammable Gas Class A - Compressed Gas Class F - Dangerously Reactive Material
	

ETHYLENE (74-85-1)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class F - Dangerously Reactive Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION

Revision date : 05/21/2015
Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

GHS Full Text Phrases:

Flam. Gas 1	Flammable gases Category 1
Liquefied gas	Gases under pressure Liquefied gas
Simple Asphy	Simple Asphyxiant
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H220	Extremely flammable gas

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H280	Contains gas under pressure; may explode if heated
H281	Contains refrigerated gas; may cause cryogenic burns or injury
H336	May cause drowsiness or dizziness

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

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Party Responsible for the Preparation of This Document

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

North America GHS US 2012 & WHMIS