

SAFETY DATA SHEET



Revision: 3.0 Date: 14 April 2021

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

Ethylene

SECTION 1: IDENTIFICATION

Product identifier

Product name Ethylene
CAS No. 74-85-1

Other means of identification

ACETENE; ATHYLEN (GERMAN); BICARBURETTED HYDROGEN;
ELAYL; ETHENE

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

Identified Use(s) Refinery feedstock.
Uses advised against Anything other than the above.

Details of the supplier of the safety data sheet

Supplier Vitol Inc.
2925 Richmond Ave, 11th Floor
Houston, TX 77098
Telephone (713) 230-1000
Fax 713-230-1185
E-mail (competent person) SDSHOU@vitol.com

Emergency telephone number

Emergency Phone No. Chemtrec: US/Canada: 1-800-424-9300 (24h)
Mexico: 800 681 9531 (24h)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200

Physical hazards Flammable gas, Category 1
Gases under pressure, Liquefied gas
Health hazards Specific target organ toxicity — single exposure, Category 3 (Narcotic effects)
Specific target organ toxicity — repeated exposure, Category 2
Simple Asphyxiant
Environmental hazards Not classified as hazardous for supply/use.

Label elements

Hazard Pictogram(s)



Signal Word(s)

DANGER

Hazard Statement(s)

Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.
May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
If safe to do so: Eliminate sources of ignition.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Use only outdoors or in a well-ventilated area.

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IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.
Protect from sunlight.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents in accordance with local, state or national legislation.

Other hazards

Gases under pressure: Compressed gas / Refrigerated liquefied gas / Compressed dissolved gas
May form explosive mixture with air. The vapour is heavier than air; beware of pits and confined spaces.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity:

0% of the mixture consists of ingredients of unknown acute inhaled toxicity.
0% of the mixture consists of ingredients of unknown acute oral toxicity.
0% of the mixture consists of ingredients of unknown acute dermal toxicity.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Classification: OSHA HCS (29 CFR 1910.1200)

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Ethylene	100	74-85-1	200-815-3	Flammable gas, Category 1 Gases under pressure, Liquefied gas Specific target organ toxicity — single exposure, Category 3 (Narcotic effects) Specific target organ toxicity — repeated exposure, Category 2 Simple Asphyxiant

SECTION 4: FIRST AID MEASURES



Description of first aid measures

Self-protection of the first aider

Eliminate sources of ignition. Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Drench contaminated clothing with water before removing to avoid risk of sparks from static electricity. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Avoid all contact.

Inhalation

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical advice/attention if you feel unwell.

Skin contact

IF ON SKIN (or hair): In case of contact with liquid, thaw frosted parts with water. Do not attempt to remove clothing which has stuck to the skin. Wash affected area with plenty of soap and water. If irritation (redness, rash, blistering) develops, get medical attention. Call a POISON CENTER/doctor.

Eye Contact

IF IN EYES: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention. If frostbite, call a physician.

Ingestion

IF SWALLOWED: Do NOT induce vomiting. If vomiting occurs turn patient on side. IF exposed or concerned: Call a POISON CENTER/doctor.

Most important symptoms and effects, both acute and delayed

Inhalation: Drowsiness, Headache
Skin Contact: Frostbite (cold burn), Redness
Eye Contact: May cause eye irritation. Pain, Watering of eyes.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Do not attempt to remove clothing that adheres to the skin due to freezing.

Notes to a physician: IF INHALED: Administer oxygen if available and artificial respiration if necessary.

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SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

If gas has ignited, do not attempt to extinguish it. Use water spray to cool and disperse vapours and protect personnel.

Unsuitable extinguishing media

Do not use water jet. Direct water jet may spread the fire.

Special hazards arising from the substance or mixture

Extremely flammable liquefied gas. Contains gas under pressure; may explode if heated. Do not extinguish a leaking gas flame unless absolutely necessary. Explosive re-ignition may occur. Decomposes in a fire giving off toxic fumes: A mixture of solid and liquid particulates and gases including unidentified organic and inorganic compounds. May form explosive mixture with air. Prevent liquid entering sewers, basements and any watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.

Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate the area and keep personnel upwind. No action should be taken involving personal risk. Eliminate sources of ignition. Stop leak if safe to do so. Do not breathe gas. Avoid all contact. Keep upwind. Ensure suitable personal protection during removal of spillages. A self contained breathing apparatus should be worn.

Methods and material for containment and cleaning up

Spills of this liquefied gas may form ice, which can plug drains and can make valves inoperable. Contact of water with liquefied gas can result in boiling, frothing, and rapid generation of vapour. Isolate the area and allow vapours to disperse. In case of contact with liquid, thaw frosted parts with water, remove clothing carefully and wash with soap & water.

Only trained and properly protected personnel must be involved in clean-up operations. Swirl gases/vapours/mists with water spray jet. Ensure adequate ventilation. Isolate the area and allow vapours to disperse.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Keep away from sources of ignition - No smoking. Use only outdoors or in a well-ventilated area. Prevent vapour build up by providing adequate ventilation during and after use. Take precautionary measures against static discharge. Use only non-sparking tools. All parts of the plant and equipment should be electrically bonded together and connected to earth. Electrical continuity should be checked at regular intervals. Antistatic clothing and footwear should be used. The vapour is heavier than air; beware of pits and confined spaces. Avoid contact with skin and eyes. Do not ingest. Avoid breathing vapours. See Section: 8. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned.

Conditions for safe storage, including any incompatibilities

Light hydrocarbon vapours can build up in the headspace of containers. These can cause flammability / explosion hazards. Bund storage facilities to prevent soil and water pollution in the event of spillage. Keep only in original container. Keep containers properly sealed when not in use. Protect from sunlight. Containers of this material may be hazardous when empty since they retain product residue.

Storage temperature
Incompatible materials

Stable at ambient temperatures.

Oxidizing agents, carbon tetrachloride, bromotrichloromethane, chlorotrifluoroethylene, copper, Peroxides, aluminum trichloride, Strong acids, strong bases

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

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SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
Ethylene	74-85-1	-	-	-	-	NIOSH
		200	-	-	-	OSHA
		-	-	-	-	ACGIH, A4

Note: OSHA PELs 1910.1000 TABLE Z-1/2/3 / NIOSH RELs / ACGIH TLVs

A4: Not Classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of the lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.

Biological exposure indicies

Not established

Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapours are likely to be evolved. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Guarantee that the eye flushing systems and safety showers are located close to the working place.

Individual protection measures, such as personal protective equipment

Fuels are typically used, transferred and transported in closed systems. If exposure is likely (i.e. during sampling) the following advice may be appropriate. Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

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Eye/ face protection



Use eye protection according to EN 166, designed to protect against liquid splashes.

Skin protection



Hand protection: Wear impervious gloves (recommended: EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Protective index 6, corresponding > 480 minutes of permeation time according to EN 374. Efficiency of at least 80%.

Recommended: Nitrile rubber;
Flouroelastomer (Minimum thickness – 0.5 – 0.65mm).

Body protection: Wear anti-static clothing and shoes.

Small scale: Wear suitable coveralls to prevent exposure to the skin.
Large scale: Chemical protection suit.

Respiratory protection



When the product is heated / In case of inadequate ventilation wear respiratory protection. The use of a high efficiency filter (recommended: EN143) is recommended. Filter type A1.

Closed system(s): Not normally required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Gas: Liquefied gas
Odour	Sweet, Mild odour
Odour threshold	not determined
pH	not applicable
Melting point/freezing point	-169 °C
Initial boiling point and boiling range	-104 °C

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Flash point	-136 °C
Evaporation rate	not determined
Flammability (solid, gas)	Extremely flammable gas.
Upper/lower flammability or explosive limits	2 - 36 % by volume, Air
Vapour pressure	not determined
Vapour density	0,98 (Air = 1)
Relative density	0.61 (Water = 1)
Solubility(ies)	not determined
Partition coefficient: n-octanol/water	Log Pow 1,13 (Quantitative structure-activity relationship (QSAR))
Auto-ignition temperature	450 °C
Decomposition temperature	not determined
Viscosity	not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions. Reacts with - Strong oxidising agents
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Vapour is explosive in air at temperatures higher than the flash point. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
Conditions to avoid	Keep away from heat, sources of ignition and direct sunlight.
Incompatible materials	Keep away from: Oxidizing agents, carbon tetrachloride, bromotrichloromethane, chlorotrifluoroethylene, copper, Peroxides, aluminum trichloride, Strong acids, strong bases
Hazardous decomposition products	Decomposes in a fire giving off toxic fumes: Carbon monoxide, Carbon dioxide

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects	
Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) > 5 mg/L (Vapour)
Acute toxicity - Skin contact	Based upon the available data, the classification criteria are not met. Calculated acute toxicity estimate (ATE) >2,000 mg/kg.
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met. Frostbite (cold burn).
Respiratory or skin sensitisation	Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Based upon the available data, the classification criteria are not met.
Reproductive toxicity	Based upon the available data, the classification criteria are not met.
STOT - single exposure	Specific target organ toxicity — single exposure, Category 3 (Narcotic effects): May cause drowsiness or dizziness. Detailed knowledge of the potential effects of higher concentrations mainly results from the application period of ethylene as an anesthetic or narcotic: Oxygen deficiency symptoms (cyanosis) were also observed after exposure to 40% ethylene. At this concentration, memory loss and confusion were caused within 15 minutes in other studies. 45-60% ethylene caused unconsciousness within 5-10 minutes, from which those affected quickly woke up after exposure was discontinued. Source: GESTIS substance database
STOT - repeated exposure	Specific target organ toxicity — repeated exposure, Category 2: May cause damage to organs through prolonged or repeated exposure. Mice that were confidentially exposed to 90% ethylene up to 20 times every 60-90 min over the course of 58 days are affected by liver damage. Source: GESTIS substance database
Aspiration hazard	Based upon the available data, the classification criteria are not met.
Other hazards	Simple Asphyxiant: May displace oxygen and cause rapid suffocation.
Information on likely routes of exposure	

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Inhalation	Possible – accidental exposure
Ingestion	Possible – accidental exposure
Skin contact	Possible – accidental exposure
Eye contact	Unlikely – accidental exposure
Early onset symptoms related to exposure	Inhalation: Drowsiness, Headache Skin Contact: Frostbite (cold burn), Redness Eye Contact: May cause eye irritation. Pain, Watering of eyes.
Delayed health effects from exposure	None Known
Exposure levels and health effects	See Section: 8
Interactive effects	None Known
Other information	
OSHA Designated Carcinogen	Not listed
NIOSH Occupational Carcinogen List	Not listed
NTP Report on Carcinogens	Not listed
IARC Monographs	Ethylene: Group 3

SECTION 12: ECOLOGICAL INFORMATION

Toxicity	No environmental hazards have been reported or known. LC50: 126.012 mg/L (Fish, 96 h, Quantitative structure-activity relationship (QSAR)) LC50: 62.482 mg/L (Daphnia spec, 48 h, Quantitative structure-activity relationship (QSAR)) ErC50: 72.2 mg/L (Pseudokirchneriella subcapitata, 72 h, OECD 201) NOEC: 13,9 mg/L (Pseudokirchneriella subcapitata, 72 h, OECD 201) Source: ECHA
Persistence and degradability	Readily biodegradable. Result: 50 % (estimated half life 2.905 days; Quantitative structure-activity relationship (QSAR)) Source: ECHA
Bioaccumulative potential	No indication of bioaccumulation potential. Log Pow 1,13 (Quantitative structure-activity relationship (QSAR)) Source: ECHA
Mobility in soil	No data available
Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Dispose of this material and its container as hazardous waste. Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point. Disposal should be in accordance with local, state or national legislation. Containers of this material may be hazardous when empty since they retain product residue.
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SECTION 14: TRANSPORT INFORMATION

	Road/rail (ADR/RID)	Sea transport (IMDG)	Air (ICAO/IATA)
UN number	UN1962	UN1962	UN1962
UN proper shipping name	ETHYLENE	ETHYLENE	ETHYLENE
Transport hazard class(es)	2.1	2.1	2.1
Packing group	-	-	-
Environmental hazards	Not classified	Not classified as a Marine Pollutant.	Not classified
Special precautions for user	See section 2		
Transport in bulk according to Annex II of Marpol and the IBC Code	No information available.		

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SECTION 15: REGULATORY INFORMATION

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

US Federal Regulations

TSCA Inventory	Listed
TSCA Chemical Data Reporting (CDR) Rule	Listed
NIOSH Occupational Carcinogen List	Not listed
EPCRA Section 313	Listed
CWA 307- Toxic	Not listed
CERCLA - Hazardous Substances	Not listed
CWA Section 311 List of Hazardous Substances	Not listed
CAA Section 112(r) Regulated Substance List	Listed

US State Regulations

Proposition 65 (California)	Not listed
Massachusetts, New Jersey, Pennsylvania, Rhode Island- State Right to Know Lists	Listed
New York -State Right to Know Lists	Listed
Minnesota - State Right to Know Lists	Listed
Massachusetts – Toxic Use reduction act	Listed

Non-Regional

IARC Monographs	Ethylene: Group 3
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SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Updated substance / mixture classification. Updated version and date. New format has been issued, all sections have been updated to include new information. Review SDS with care.

Version	3.0
Revision Date	14 April 2021
Date of First Issue	Not available. 2 ND ISSUE RELEASED JUNE, 15 2015

This Safety Data Sheet was prepared in accordance with US Regulation OSHA HCS (29 CFR 1910.1200)

References:

Existing Safety Data Sheet (SDS),
EU Harmonised Classification(s) for Ethylene (CAS No.: 74-85-1)
Existing ECHA registration(s) for Ethylene (CAS No.: 74-85-1)
Germany GESTIS Substance database Entry for Ethylene (CAS No.: 74-85-1)

Legend

ADR/RID	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road / RID: Regulations concerning the international railway transport of dangerous goods
BCF	Bioconcentration factor (BCF)
CAS	CAS: Chemical Abstracts Service
DNEL	Derived no effect level
EC	EC: European Community
EU	European Union
IATA	IATA: International Air Transport Association
ICAO/IATA	ICAO: International Civil Aviation Organization / IATA: International Air Transport Association
IMDG	IMDG: International Maritime Dangerous Goods
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
UN	United Nations
vPvB	very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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