Chemical Safety Data Sheet MSDS / SDS

Ethylene SDS

Revision Date:2024-04-25 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Ethylene

CAS: 74-85-1

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Gases under pressure: Liquefied gas
Flammable gases, Category 1A, Flammable gas

Specific target organ toxicity – single exposure, Category 3

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H220 Extremely flammable gas
H336 May cause drowsiness or dizziness

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 In case of leakage, eliminate all ignition sources.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.

Storage

P410+P403 Protect from sunlight. Store in a well-ventilated place.
P403 Store in a well-ventilated place.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Ethylene
Common names and synonyms:	Ethylene
CAS number:	74-85-1
EC number:	200-815-3
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

Moderate concentration in air causes drowsiness, dizziness, and unconsciousness. Overexposure causes headache, drowsiness, muscular weakness. (USCG, 1999)
Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: Vapors may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns,

severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. (ERG, 2016)
SYMPTOMS: Acute exposure to this compound can produce irritation of eyes, nose, throat, mucous membranes and the upper respiratory tract. ACUTE/CHRONIC HAZARDS: This compound emits acrid fumes and smoke when heated to decomposition. It is an irritant of mucous membranes and the upper respiratory tract. (NTP, 1992)

Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Aliphatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

To fight fire, stop flow of gas, use CO2, alcohol foam or dry chemical.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Vapors are anesthetic. Behavior in Fire: Container may explode. (USCG, 1999)
Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: EXTREMELY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.) 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. (ERG, 2016)
This chemical is combustible. (NTP, 1992)

Special protective actions for fire-fighters

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with water spray. In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Ventilation. Remove all ignition sources. Turn off gas at source if possible. Personal protection: chemical protection suit including self-contained breathing apparatus.

Environmental precautions

Evacuate danger area! Ventilation. Remove all ignition sources. Turn off gas at source if possible. Personal protection: chemical protection suit including self-contained breathing apparatus.

Methods and materials for containment and cleaning up

Spills on land: Contain if possible, by forming mechanical and/or chemical barriers to prevent spreading.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Use non-sparking handtools. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants.Store in cool dry, well-ventilated location. Protect against static electricity and lightning. Isolate from oxidizing materials, halogens, and other combustibles.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 200 ppm as TWA; A4 (not classifiable as a human carcinogen).MAK: carcinogen category: 3B

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Use ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Ethylene is a colorless gas with a sweet odor and taste. It is lighter than air. It is easily ignited and a flame can easily flash back to the source of the leak. Under prolonged exposure to fire or heat the containers may rupture violently and rocket. Can cause explosion.
Colour:	Colorless gas
Odour:	Sweet
Melting point/freezing point:	-169°C
Boiling point or initial boiling point and boiling range:	?104°C(lit.)

Flammability:	Extremely flammable.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 2.7% by volume; Upper flammable limit: 36.0% by volume
Flash point:	-100°C
Auto-ignition temperature:	842°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.01 mPa.s 20 deg C
Solubility:	1 vol dissolves in about 4 vol water at 0 deg C, in about 9 vol water at 25 deg C, in about 0.5 vol alcohol at 25 deg C, in about 0.05 vol ether at 15.5 deg C
Partition coefficient n-octanol/water:	log Kow = 1.13
Vapour pressure:	35.04 atm (20 °C)
Density and/or relative density:	0.00126
Relative vapour density:	0.97 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance may polymerize to form aromatic compounds under the influence of temperatures above 600°C. Reacts with strong oxidants. This generates fire and explosion hazard.
Decomposes on heating. This produces toxic and irritating fumes. This generates fire and explosion hazard. Reacts violently with fluorine. Reacts with strong acids and strong oxidants.

Chemical stability

no data available

Possibility of hazardous reactions

Flammable gasThe gas is lighter than air. As a result of flow, agitation, etc., electrostatic charges can be generated.,Dust explosion possible if in powder or granular form, mixed with air.Peroxidizable monomer may initiate exothermic polymerization of the bulk material [Bretherick 1979. p. 160]. Ethylene in the presence of aluminum chloride may undergo a violent reaction [J. Inst. Pet. 33:254. 1947]. Ozone and ethylene react explosively [Berichte 38:3837]. Ethylene can polymerize at low pressure if catalyzed by titanium halides. (Sundaram, K. M, M. M. Shreehan, E. F. Olszewski. "Ethylene." Kirk-Othmer Encyclopedia of Chemical Technology. John Wiley & Sons, Inc. 2001.)

Conditions to avoid

no data available

Incompatible materials

Reacts vigorously with oxidizing materials.

Hazardous decomposition products

When heated to decomposition it emit acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 950,000 ppm (1093 g/cu m)

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence in humans for the carcinogenicity of ethylene. There is inadequate evidence in experimental animals for the carcinogenicity of ethylene. Overall evaluation: Ethylene is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

Exposure could cause lowering of consciousness.

STOT-repeated exposure

no data available

Aspiration hazard

On loss of containment this substance can cause suffocation by lowering the oxygen content of the air in confined areas.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

Pure culture studies suggest that ethylene may be susceptible to microbial degradation(1-3).

Bioaccumulative potential

An estimated BCF of 4 was calculated for ethylene(SRC), using a log Kow of 1.13(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of ethylene is estimated as 98(SRC), using a log Kow of 1.13(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that ethylene is expected to have high mobility in soil.

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1038 (For reference only, please check.)
IMDG: UN1038 (For reference only, please check.)
IATA: UN1038 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: ETHYLENE, REFRIGERATED LIQUID (For reference only, please check.)
IMDG: ETHYLENE, REFRIGERATED LIQUID (For reference only, please check.)
IATA: ETHYLENE, REFRIGERATED LIQUID (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.1 (For reference only, please check.)
IMDG: 2.1 (For reference only, please check.)
IATA: 2.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: (For reference only, please check.)
IMDG: (For reference only, please check.)
IATA: (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area.