Ethylene

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878
Issue date: 5/14/2000 Revision date: 8/23/2022 Version: 7.0

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

1.1. Product identifier

Chemical type	:	Substance
Trade name	:	Ethylene
Trade name	:	Ethylene
EC Index-No.	:	601-010-00-3
EC-No.	:	200-815-3
CAS-No.	:	74-85-1
REACH registration No	:	01-2119462827-27-0080
Product code	:	19900007
IUPAC name	:	ethylene, pure
Formula	:	C2H4

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

1.2.1. Relevant identified uses

Main use category	:	Industrial use
Industrial/Professional use spec	:	Polymer production Other Consumer Uses Manufacture of substance Polymer processing Use as an intermediate Use in laboratories Use as a fuel Distribution of substance Functional Fluids Rubber production and processing

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

SLOVNAFT, a.s. a.s.
Vlčie hrdlo 1
SK– 824 12 Bratislava
Slovakia
T +421-(0)2/4055-1111 - F +421-(0)2/5859-9759
info@slovnaft.sk - www.slovnaft.sk

1.4. Emergency telephone number

Emergency number : Podnikový dispečing 1: ++0421(0)2/4055 3344

Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
Israel	Israel Poison Information Center Rambam Health Care Campus	6 Ha'Aliya Street 31096 Haifa	+972 4 854 1900	

Country	Organisation/Company	Address	Emergency number	Comment
Malta	Medicines & Poisons Info Office	Mater Dei Hospital MSD 2090 Msida	+356 2545 6508	
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA Belfast	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Cardiff Centre) University Hospital Llandough	Penlan Road CF64 2XX Cardiff	0344 892 0111	Only for healthcare professionals
United Kingdom	National Poisons Information Service (Edinburgh Centre) Royal Infirmary of Edinburgh	Little France Crescent EH16 4SA Edinburgh	0344 892 0111	Only for healthcare professionals
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	+44 20 7188 7188	
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre	16/17 Framlington Place Newcastle-upon-Tyne NE2 4AB Newcastle	0344 892 0111	Only for healthcare professionals

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable gases, Category 1A	H220
Gases under pressure : Liquefied gas	H280
Specific target organ toxicity – Single exposure, Category 3, Narcosis	H336

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS02 GHS04 GHS07

Signal word (CLP) : Danger

Hazard statements (CLP) : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H336 - May cause drowsiness or dizziness.

Precautionary statements (CLP) : P210 - Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 - Use only outdoors or in a well-ventilated area.
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
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.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

Contains no PBT/vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII
Endocrine disruptors: not yet evaluated

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : SPC / 200-815-3 / Ethylene
CAS-No. : 74-85-1
EC-No. : 200-815-3
EC Index-No. : 601-010-00-3

Name	Product identifier	%
ethylene	CAS-No.: 74-85-1 EC-No.: 200-815-3 EC Index-No.: 601-010-00-3	99.97
ethane	CAS-No.: 74-84-0 EC-No.: 200-814-8 EC Index-No.: 601-002-00-X	0.015 – 0.03
methane	CAS-No.: 74-82-8 EC-No.: 200-812-7 EC Index-No.: 601-001-00-4	0.002 – 0.01

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Take care to self-protect by avoiding becoming contaminated . Move contaminated patient(s) out of the dangerous area. Seek medical assistance -

First-aid measures after inhalation : Do not leave the victim unattended. Keep warm and at rest. Seek immediate medical attention. If breathing is difficult, give oxygen if possible, or assisted ventilation. In the event of cardiac arrest, (no pulse), apply cardiopulmonary resuscitation.

First-aid measures after skin contact : Do not remove clothing that adheres due to freezing. Immediately flush affected area with plenty of water.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do so.

First-aid measures after ingestion : Not considered a likely route of exposure – frostbite to the lips and mouth may occur if in contact with the liquid.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : Exposure to high concentrations may cause asphyxiation as a consequence of oxygen deficiency.

Symptoms/effects after skin contact : Contact with product in liquid form may cause frostbite.

Symptoms/effects after eye contact : Contact with product in liquid form may cause frostbite.

4.3. Indication of any immediate medical attention and special treatment needed

A simple asphyxiant gas at normal temperatures and pressures. There is no specific antidote. In the event of contact with product in liquid form treat for frostbite.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry chemical powder. Carbon dioxide. Sand or earth. Foam (trained personnel only). Water fog (trained personnel only).

Unsuitable extinguishing media : Do not use direct water jets on the burning product. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

No additional information available

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : a Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure.

Emergency procedures : Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Stay upwind. Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Enter area only if strictly necessary. A combustible gas detector can be used to check for flammable gas or vapors. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). If required, notify relevant authorities according to all applicable regulations.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Stop leak if safe to do so. Spillages of product generate large volumes of extremely flammable gas which is heavier than air and will accumulate in low areas. Ensure adequate ventilation of confined spaces, especially underground ones. Spillages of liquid product in the water will likely result in a quick and complete vaporization of the product. Isolate the area and prevent fire/explosion hazard for ships and other structures, taking into account wind direction and speed, until the product is completely dispersed. Prevent product from entering sewers, rivers or other bodies of water, or underground spaces (tunnels, cellars, etc.).

6.3. Methods and material for containment and cleaning up

Other information : Use only non-sparking tools.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Risk of explosive mixtures of vapour and air. A specific assessment of inhalation risks from the presence of H2S in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances. Consider technical advances and process upgrades (including automation) for the elimination of releases. Clean/flush equipment, where possible, prior to maintenance. Consider the need for risk based health surveillance. Regularly inspect, test and maintain all control measures. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid all sources of ignition, oxidising agents, chlorine and hydrogen chloride or hydrogen fluoride. Take precautionary measures against static electricity. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. Handle empty containers with care; vapour residue may be flammable. Do not weld, solder, drill, cut or perform similar operations on or near containers. Dispose of rinse water in accordance with local and national regulations. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Use piping and equipment designed to withstand the pressures to be encountered. Use a check valve or other protective device to prevent reverse flow. Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Do not eat, drink or smoke when using this product. For maintenance work or conservation, emptied tanks should be purged, and blanketed with inert gas (i.e. nitrogen).

Storage conditions : To stored only in supplied cylinders or approved vessels. Cylinders should be secured vertical - and only transported in a secure position in a well ventilated vehicle or hand truck. Cylinders which have been are opened must be carefully resealed and kept upright.

Storage area : Store in a designated cool and well-ventilated place.

7.3. Specific end use(s)

Site documentation to support safe handling arrangements including the selection of engineering, administrative and personal protective equipment controls in accordance with risk-based management systems is available at each manufacturing site.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:
Do not enter empty storage tanks until measurements of available oxygen have been carried out. Ensure control measures are regularly inspected and maintained.

8.2.2. Personal protection equipment

Personal protective equipment:
Gloves. Protective goggles. Self-contained breathing apparatus if conc. in air > TLV. High gas/vapour concentration: gas mask with filter type A.

Personal protective equipment symbol(s):

8.2.2.1. Eye and face protection

Eye protection:
If splashing is likely, full head and face protection (protective shield and/or safety goggles) should be used.

8.2.2.2. Skin protection

Skin and body protection:
For loading/unloading operations: wear safety helmet with integrated full face visor and neck protection. normal antistatic working clothes are usually adequate

Hand protection:
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Other skin protection

Materials for protective clothing:
Protective clothing. Clothing to protect against heat and flame (EN 11612)

8.2.2.3. Respiratory protection

Respiratory protection:
Self-contained closed-circuit breathing apparatus compressed oxygen or compressed oxygen-nitrogen type (EN 145).

8.2.2.4. Thermal hazards

Thermal hazard protection:
None in normal conditions.

8.2.3. Environmental exposure controls

Environmental exposure controls:
Store finished products in closed containers (e.g, bulk tanks, drums, cans). Use vapour recovery units when necessary. Store all VOC-containing wastes in closed, secure containers (e.g, bulk tanks, intermediate bulk containers, drums).

Consumer exposure controls:
Site documentation to support safe handling arrangements including the selection of engineering, administrative and personal protective equipment controls in accordance with risk-based management systems is available at each manufacturing site.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Gas
Colour	:	Colourless.
Odour	:	sweet odour.
Odour threshold	:	No data available
pH	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	-169 °C
Freezing point	:	No data available
Boiling point	:	-104 °C
Flash point	:	< -100 °C Closed cup method
Auto-ignition temperature	:	425 °C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	41 bar
Relative vapour density at 20°C	:	0.975

Relative density	:	No data available
Relative gas density	:	1.178 g/cm3 at 15 ° C Literature data
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	1.21
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	2.7 – 34 vol %

9.2. Other information

Gas group : Press. Gas (Liq.)

SECTION 10: Stability and reactivity

10.1. Reactivity

This substance is stable under all ordinary circumstances at ambient temperatures, and if released into the environment.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard.

10.4. Conditions to avoid

They may be ignited by heat, sparks, static electricity or flames.

10.5. Incompatible materials

A mixture with nitrates or other strong oxidisers (e.g. chlorates, perchlorates, liquid oxygen) may create an explosive mass.

10.6. Hazardous decomposition products

Combustion (incomplete) will likely generate oxides of carbon, sulphur and nitrogen, as well as additional undetermined organic compounds of the same elements. No decomposition if stored normally.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Not classified
Skin corrosion/irritation	:	Not classified
Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitisation	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
STOT-single exposure	:	May cause drowsiness or dizziness.

ethylene (74-85-1)

STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure	:	Not classified
Aspiration hazard	:	Not classified

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short–term (acute) : Not classified
Hazardous to the aquatic environment, long–term (chronic) : Not classified

Ethylene (74-85-1)	
LC50 - Other aquatic organisms [1]	1 – 100 mg/l algae

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Ethylene (74-85-1)	
Partition coefficient n-octanol/water (Log Pow)	1.21

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives. Disposal must be done according to official regulations.
Waste treatment methods : Contain and dispose of waste according to local regulations. External treatment and disposal of waste should comply with applicable local and/or national regulations.
Sewage disposal recommendations : Not applicable as there is no release to wastewater. Soil emission controls are not applicable as there is no direct release to soil.
Waste disposal recommendations : Clear up spills immediately and dispose of waste safely. Wastewater emission controls are not applicable as there is no direct release to wastewater. Dispose of waste or used sacks/containers according to local regulations.
Additional information : PPE see: Section 8.2.
Ecology - waste materials : No special regulations.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	RID	ADN	IMDG	IATA
14.1. UN number				
1038	1038	1038	1038	1038
14.2. UN proper shipping name				
ETHYLENE, REFRIGERATED LIQUID	ETHYLENE, REFRIGERATED LIQUID	ETHYLENE, REFRIGERATED LIQUID	ETHYLENE, REFRIGERATED LIQUID	Ethylene, refrigerated liquid

ADR	RID	ADN	IMDG	IATA
14.3. Transport hazard class(es)				
2.1 	2.1 	2.1	2.1	2.1 Not applicable
14.4. Packing group				
Not applicable			Not applicable	
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
14.6. Special precautions for user				
3F	3F	3F		
No supplementary information available				

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Not listed on REACH Annex XVII
Not listed on the REACH Candidate List
Not listed on REACH Annex XIV (Authorisation List)
Not listed on the PIC list (Regulation EU 649/2012)
Not listed on the POP list (Regulation EU 2019/1021)
Not listed on the Ozone Depletion list (Regulation EU 1005/2009)
Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)
Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Germany

Water hazard class (WGK)	:	WGK nwg, Non-hazardous to water (Classification according to AwSV; ID No. 742)
Hazardous Incident Ordinance (12. BImSchV)	:	Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

SZW-lijst van kankerverwekkende stoffen	:	The substance is not listed
SZW-lijst van mutagene stoffen	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	:	The substance is not listed

Denmark

Class for fire hazard	:	Class I-1
Store unit	:	1 liter
Classification remarks	:	F+ <Flam. Gas 1A; Press. Gas (Liq.)>; Emergency management guidelines for the storage of flammable liquids must be followed
Danish National Regulations	:	Young people below the age of 18 years are not allowed to use the product

Switzerland

Storage class (LK)	:	LK 2 - Liquefied or pressurized gases

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Data sources : LOA registration dossier. Data arise from reference works and literature.
Training advice : Before handling, storing or using the present substance for the first time, employees must be informed.

Full text of H- and EUH-statements:	
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H336	May cause drowsiness or dizziness.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis

SDS EU (REACH Annex II) MOL

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.