

Ethylene

Print date 22.02.2024
 Revision date 22.02.2024
 Version 16.0 (en)
 replaces version of 07.06.2023 (14.0)

*** SECTION 1: Identification of the substance/mixture and of the company/undertaking***** 1.1 Product identifier**

Trade name/designation Ethylene
Art-Nr(n). 1300-1305, 70130
Substance name ethylene
Index No 601-010-00-3
EC No 200-815-3
REACH No. 01-2119462827-27
CAS No 74-85-1

*** 1.2 Relevant identified uses of the substance or mixture and uses advised against***** Use of the substance/mixture**

Basic substance
 Refrigerant
 Test gas

1.3 Details of the supplier of the safety data sheet**Supplier**

GHC Gerling, Holz & Co. Handels GmbH
 Ruhrstraße 113
 D-22761 Hamburg
 Telephone +49 40 853 123 0
 E-mail hamburg@ghc.de
 Website www.ghc.com

Department responsible for information:
 GHC Gerling, Holz & Co. Handels GmbH
 Telephone +49 40 853 123 0

E-mail (competent person):
 msds@ghc.de

*** 1.4 Emergency telephone number**

EN: Poison Information Center Mainz +49 6131 19240

*** SECTION 2: Hazards identification***** 2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 [CLP]	Classification procedure
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Flam. Gas 1A, H220

Press. Gas (Liq.), H280

STOT SE 3, H336

Hazard statements for physical hazards

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H336 May cause drowsiness or dizziness.

*** 2.2 Label elements***** Labelling according to Regulation (EC) No 1272/2008 [CLP]**

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Hazard pictograms

GHS02



GHS07

Signal word

Danger

Hazard statements

H220 Extremely flammable gas.
 H280 Contains gas under pressure; may explode if heated.
 H336 May cause drowsiness or dizziness.

*

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P260 Do not breathe gas/vapours.
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P315 Get immediate medical advice/attention.
 P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 P381 In case of leakage, eliminate all ignition sources.
 P403 Store in a well-ventilated place.

*

Supplemental hazard information

Please return container with residual pressure.

2.3 Other hazards**Adverse human health effects and symptoms**

The inhalation of gas / vapour in high concentrations may cause cardiac arrhythmia.
 Contact with liquid may cause cold burns/frostbite.

Other adverse effects

The substance/mixture does not contain components identified as having endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605 in quantities of 0.1% or more.

Results of PBT and vPvB assessment

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

SECTION 3: Composition / information on ingredients**3.1 Substances**

Substance name	ethylene
Index No	601-010-00-3
EC No	200-815-3
REACH No.	01-2119462827-27
CAS No	74-85-1
ATE	ATE(): > 57000 ppm

Additional information

Content: >= 99,9 %

3.2 Mixtures

not applicable

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SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Remove contaminated, saturated clothing immediately.
In the event of persistent symptoms obtain medical treatment.
First aider: Pay attention to self-protection!

Following inhalation

Remove casualty to fresh air and keep warm and at rest.
In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Obtain medical assistance.

Following skin contact

In case of skin contact rinse with warm water.
In case of frostbite, wash with plenty of water; do not remove clothing.
In case of frostbite rinse with lukewarm (not hot) water for at least 15 minutes. Do not remove clothing frozen to the skin.
Thaw with lukewarm water. Apply a sterile dressing. Obtain medical assistance.

After eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical assistance.

Following ingestion

Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms

The following symptoms may occur in case of strong exposition:
Dizziness
Unconsciousness

Effects

In low concentrations may cause narcotic effects.
Cerebral oedema

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor

Treat symptomatically.
Do not apply drugs of the adrenaline ephedrine group.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Extinguishing powder
Water spray jet

Unsuitable extinguishing media

Carbon dioxide (CO₂)
Full water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

In case of fire formation of dangerous gases possible.
Carbon monoxide
Carbon dioxide (CO₂)

5.3 Advice for firefighters

Special protective equipment for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

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Additional information

If possible, shut off gas valves and move containers to a safe location.
Use water spray jet to protect personnel and to cool endangered containers.
Exposure to fire may cause rupture / explosion of the containers.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Dispose of fire residues and contaminated extinguishing water in accordance with local, official regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Use personal protection equipment.
Leave the danger area.
Keep people away and stay on the upwind side.

For emergency responders

Personal protection by wearing close-fitting protective clothing and breathing apparatus.
Eliminate all ignition sources if safe to do so.
Remove persons to safety.

6.2 Environmental precautions

If possible, stop flow of product.
Do not allow to enter into soil/subsoil.
Do not allow to enter into surface water or drains.

6.3 Methods and material for containment and cleaning up

For containment

If necessary, secure leaky pressure receptacles using a salvage container.
Prevent the liquid from spreading over a wide area (set up barriers, cover sewage systems).
Limit expansion of the gas (water spray jet).

For cleaning up

Leave to vapourize.
Provide adequate ventilation.

6.4 Reference to other sections

Disposal: see section 13
Personal protection equipment: see section 8

* SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Use only in well-ventilated areas.
Transfer and handle product only in closed systems.
Usual measures for fire prevention.
Containers' temperature should not be increased above 50 °C.
The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.
Prevent cylinders from falling over.
Take precautionary measures against static discharges. Ground barrels and installations. Use only antistatically equipped (spark-free) tools.
Use explosion-proof machinery, apparatus, ventilation facilities, tools etc.
Ensure valve protection device is correctly fitted.
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Open valve slowly to avoid pressure shock.
Do not allow backflow into the container.
Entering of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.

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Advices on general occupational hygiene

When using do not eat, drink, smoke, sniff.
 Wash hands before breaks and after work.
 Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities**Requirements for storage rooms and vessels**

All regulations and local requirements for the storage of containers have to be respected.
 Keep container tightly closed and in a well-ventilated place.
 Containers' temperature should not be increased above 50 °C.
 Prevent cylinders from falling over.
 Only use containers specifically approved for the substance/product.
 Information on suitable materials for receptacles and valves see ISO 11114.

Materials to avoid

Do not store together with explosives.
 Do not store together with flammable liquids.
 Do not store together with flammable solids.
 Do not store together with pyrophoric and self-heating substances.
 Do not store together with oxidizing liquids or oxidizing solids.
 Do not store together with toxic liquids or toxic solids.
 Do not store together with infectious substances.
 Do not store together with radioactive material.
 Do not store together with food or feed.

*** 7.3 Specific end use(s)**

* **Recommendation**
 See section 1.2

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limit values**

CAS No	EC No	Substance name	occupational exposure limit value
74-85-1	200-815-3	Ethylene	200 [ml/m ³ (ppm)] (IE)

8.2 Exposure controls**Appropriate engineering controls****Technical measures to prevent exposure**

Transfer and handle only in enclosed systems.

Personal protection equipment**Eye/face protection**

Protective goggles according to EN 166, in case of increased risk add protective face shield.

Hand protection

Safety gloves according to EN 388:
 Chromate-free leather

Body protection:

Safety shoes with steel toecap.
 Body covering work clothing or chemical resistant suit at increased risk.

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.

Respiratory protection necessary at:
 high concentrations

Respiratory protection complying with EN 137.

Do not use any filter apparatus.

In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation due to displacement of oxygen.

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Thermal hazards

Use cold-resistant protective equipment.

Environmental exposure controls**Remark**

Prevent release to the environment.

*** SECTION 9: Physical and chemical properties***** 9.1 Information on basic physical and chemical properties****Physical state**

Gaseous / liquefied under pressure.

Colour

colourless

Odour

sweetish

Safety relevant basis data

	Value	Method	Source, Remark
Odour threshold:			not determined
Melting point/freezing point			not applicable
Boiling point or initial boiling point and boiling range	-103.8 °C		
flammability			Extremely flammable gas (H220).
Lower and upper explosion limit	Upper explosion limit 32.6 Vol-%		
Lower and upper explosion limit	Lower explosion limit 2.4 Vol-%		
Flash point			not applicable
Auto-ignition temperature	440 °C		
Decomposition temperature			No decomposition if used as directed.
pH			not applicable
Viscosity			not applicable
Solubility(ies)	Water solubility 130 mg/L		
Partition coefficient n-octanol/water (log value)	1.13		
Vapour pressure	40900 hPa (0°C)		
Density and/or relative density			not applicable
Relative vapour density	0.97		air = 1
particle characteristics			not applicable

9.2 Other information**Information with regard to physical hazard classes****Gases under pressure****Safety characteristics**

	Value	Method, Result	Source, Remark
Critical temperature	9.2 °C		

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SECTION 10: Stability and reactivity**10.1 Reactivity**

May form an explosive mixture with air.

10.2 Chemical stability

Danger of polymerisation

10.3 Possibility of hazardous reactions

Must not be mixed with air or oxygen.
 Reactions with numerous chemical compounds.
 Reactions with oxidising agents.

10.4 Conditions to avoid

Heat sources / heat - risk of bursting.
 Ignition sources, open flames, glowing metal surfaces, etc.

10.5 Incompatible materials

Acetylene
 Chlorine
 Hydrochloric gas
 Fluorine
 Copper, brass and other copper alloys

10.6 Hazardous decomposition products

When handled and stored appropriately, no dangerous decomposition products are known.

*** SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity****Animal data**

	Effective dose	Method, Evaluation	Source, Remark
Acute oral toxicity			Study technically not feasible.
Acute dermal toxicity			Study technically not feasible.
Acute inhalation toxicity	CAS No74-85-1 ethylene LC50: > 57000 ppm Species Rat Exposure time 4 h		

Assessment/classification

Based on available data, the classification criteria are not met.

*** Skin corrosion/irritation****Other information**

Study technically not feasible.

*** Serious eye damage/irritation****Other information**

Study technically not feasible.

Sensitisation to the respiratory tract**Other information**

No data available

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* **Skin sensitisation**

Other information

Study technically not feasible.

* **Germ cell mutagenicity**

	Value	Method	Result / Evaluation	Remark
In vitro mutagenicity/genotoxicity	Species Salmonella typhimurium	OECD 471	negative	
In vivo mutagenicity/genotoxicity	Species Rat	OECD 474	negative	

Assessment/classification

Based on available data, the classification criteria are not met.

Carcinogenicity

Animal data

	Value	Method	Result / Evaluation	Remark
Carcinogenicity	inhalative NOAEC 3000 ppm Species rat (male/female) Exposure duration 2 a	OECD 453		

Assessment/classification

Based on available data, the classification criteria are not met.

* **Reproductive toxicity**

Animal data

	Value	Method	Result / Evaluation	Remark
Reproductive toxicity	inhalative NOAEC 5000 ppm Species Rat Exposure duration 28 d	OECD 421		

Assessment/classification

Based on available data, the classification criteria are not met.

STOT-single exposure

STOT SE 1 and 2

Assessment/classification

Based on available data, the classification criteria are not met.

STOT SE 3

Narcotic effects

Assessment/classification

May cause drowsiness or dizziness.

* **STOT-repeated exposure**

* **Animal data**

	Effective dose	Method	Specific effects:	Organs affected:	Source, Remark
Inhalative specific target organ toxicity (repeated exposure)	NOAEL(C): 10000 ppm Species Rat (male / female) Exposure duration 91 d	OECD 413			

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Assessment/classification

Based on available data, the classification criteria are not met.

Aspiration hazard**Assessment/classification**

Study technically not feasible.

11.2 Information on other hazards**Additional information**

The inhalation of gas / vapour in high concentrations may cause cardiac arrhythmia.
 Inhalation causes narcotic effects/intoxication.

*** SECTION 12: Ecological information***** 12.1 Toxicity***** Aquatic toxicity**

	Effective dose	Method, Evaluation	Source, Remark
Acute (short-term) fish toxicity	LC50: 115 mg/L Test duration 96 h	QSAR	
Chronic (long-term) fish toxicity	LOEC: 12.4 mg/L Test duration 30 d	QSAR	
Acute (short-term) toxicity to crustacea	LC50 215 mg/L Test duration 48 h	QSAR	
Chronic (long-term) toxicity to aquatic invertebrate	NOEC 41.3 mg/L Test duration 21 d	QSAR	
Acute (short-term) toxicity to algae and cyanobacteria	EC50 30.3 mg/L Test duration 96 h	QSAR	
Chronic (long-term) toxicity to aquatic algae and cyanobacteria	not determined		
Toxicity to other aquatic plants/organisms	not determined		
Toxicity to microorganisms	EC50 1760.9 mg/L Species activated sludge Test duration 72 h	QSAR	

12.2 Persistence and degradability

	Value	Method	Source, Remark
Biodegradation	Degradation rate 50 % Test duration 2.9 d	QSAR	CAS No74-85-1 ethylene

Assessment/classification

Readily biodegradable (according to OECD criteria).

12.3 Bioaccumulative potential

	Value	Method	Source, Remark
Bioconcentration factor (BCF)	Bioconcentration factor (BCF) 2.6		

Assessment/classification

Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

12.4 Mobility in soil

	Value	Distribution	Transport type	Method	Remark
Half-life time in soil	CAS No74-85-1 ethylene 0.98			log Koc	

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12.5 Results of PBT and vPvB assessment

The substance/mixture does not contain components meeting the PBT/vPvB criteria of the Reach Regulation, Annex XIII, at levels of 0.1% or higher.

*** 12.6 Endocrine disrupting properties**

No data available

*** 12.7 Other adverse effects**

	Value	Method	Source, Remark
Ozone depletion potential (ODP):	0		
Global warming potential (GWP)	4		

*** SECTION 13: Disposal considerations***** 13.1 Waste treatment methods****Waste codes/waste designations according to EWC/AVV**

Waste code product	Waste name
160504 *	gases in pressure containers (including halons) containing hazardous substances

*** Appropriate disposal / Product**

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.
 Prevent release to the environment. No disposal via the sewage.
 Disposal according to local regulations.

Appropriate disposal / Package

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

SECTION 14: Transport information

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number or ID number	UN 1962	UN 1962	UN 1962
14.2 UN proper shipping name	ETHYLENE	ETHYLENE	Ethylene
14.3 Transport hazard class(es)	2.1	2.1	2.1
14.4 Packing group	-	-	-
14.5 Environmental hazards	No	No	No

14.6 Special precautions for user

The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

14.7 Maritime transport in bulk according to IMO instruments

No carriage in bulk.

Land transport (ADR/RID)

UN number or ID number	UN 1962
UN proper shipping name	ETHYLENE
Transport hazard class(es)	2.1
Hazard label(s)	2.1
Classification code	2F
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	0
Special provisions	662
Tunnel restriction code	B/D

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Sea transport (IMDG)

UN number or ID number	UN 1962
UN proper shipping name	ETHYLENE
Transport hazard class(es)	2.1
Packing group	-
Environmental hazards	No
Limited quantity (LQ)	0
Marine pollutant	No
EmS	F-D, S-U

Air transport (ICAO-TI / IATA-DGR)

UN number or ID number	UN 1962
UN proper shipping name	Ethylene
Transport hazard class(es)	2.1
Packing group	-
Environmental hazards	No

*** SECTION 15: Regulatory information***** 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***** EU legislation****Restrictions of occupation**

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.
 Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

*** Other regulations (EU)****To follow:**

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 40.
 Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.
 National and local regulations concerning chemicals shall be observed.

*** Directive 2010/75/EU on industrial emissions [Industrial Emissions Directive] VOC**
VOC-value \geq 99.9 %**15.2 Chemical Safety Assessment***** National regulations**

For this substance a chemical safety assessment has been carried out.

*** SECTION 16: Other information***** Abbreviations and acronyms**

Flam. Gas 1A: Flammable gas, Category 1A
 Press. Gas (Liq.): Liquefied gas (LG)
 STOT SE 3, H336: Specific target organ toxicity (single exposure), Category 3 (narcotic effects)

Key literature references and sources for data

Information from our suppliers and data from the "GESTIS Substances Database" and the "Registered Substances" database of the European Chemicals Agency (ECHA) were used to create this safety data sheet.

Additional information

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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Relevant H- and EUH-phrases (Number and full text)

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
H336 May cause drowsiness or dizziness.

Indication of changes

* Data changed compared with the previous version