

# ETHYLENE

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 5/5/2017

Revision date:

Supersedes: 9/9/2015 Version: 13.3

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

#### 1.1. Product identifier

Product form : Substance

Substance name : ETHYLENE

EC No : 200-815-3

CAS No : 74-85-1

REACH registration No : Total Olefins Antwerp (01-2119462827-27-0034) - Naphtachimie (01-2119462827-27-0038) - Total Petrochemicals & Refining (01-2119462827-27-0043) - Total Research & Technology Feluy (01-2119462827-27-0049) (01-2119462827-27-0157) - TP Development (01-2119462827-27-0146)

Type of product : Ethylene is sold in two forms:  
 1) COMPRESSED ETHYLENE (distributed by pipeline) - UN number: 1962  
 2) REFRIGERATED LIQUID ETHYLENE (in tanks) - UN number: 1038  
 Two different SDSs are available, if the SDS supplied does not correspond with the product form, please request the correct SDS

Synonyms : 74-85-1

Product group : -

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

##### 1.2.1. Relevant identified uses

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Main use category : Professional use

Use of the substance/mixture : Distribution of substance  
 Manufacture of substances  
 Synthesis intermediate  
 Formulation & (re)packing of substances and mixtures  
 Polymer production  
 Polymer preparations and compounds  
 Rubber production and processing  
 Functional Fluids  
 Use in laboratories  
 Use as a fuel

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

REFINING & CHEMICALS BRANCH  
 TOTAL PETROCHEMICALS & REFINING SA/NV  
 Rue de l'Industrie 52 Nijverheidsstraat - B-1040 BRUSSELS - BELGIUM  
 T +32 (0)2.288.91.11  
[rc.fer-sds@total.com](mailto:rc.fer-sds@total.com) - [www.total.com](http://www.total.com)

#### 1.4. Emergency telephone number

Emergency number : Emergency call Carechem 24 International :  
 • for English speaking countries: +44 (0) 1235 239 670  
 • for Europe (in local languages): + 33 1 49 00 00 49  
 • for Africa and Middle East: + 44 (0) 1235 239 671 • for China:  
 + 86 10 5100 3039  
 • for Asia Pacific (Hong-Kong, Singapore, Taiwan, Philippines, India, Vietnam, Sri Lanka, Japan, Korea, Malaysia, Indonesia, Thailand) :  
 + 65 3158 1074

Country	Organisation/Company	Address	Emergency number	Comment
	National Poisons Emergency number		08 45 46 47	
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 +353 1 809 2166 (public, 8am - 10pm, 7/7)	



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### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

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

Flammable gases, Category 1 H220  
Gases under pressure : Compressed gas H280  
Specific target organ toxicity — Single exposure, Category 3, Narcosis H336  
Full text of H statements : see section 16

#### Adverse physicochemical, human health and environmental effects

In high concentrations vapours cause anaesthetic and narcotic effect. Contact with the liquefied gas may cause frostbite. Extremely flammable gas. Take precautionary measures against static discharge during blending and transfer operations. In use may form flammable/explosive vapour-air mixture. Risk of ignition at distance.

#### 2.2. Label elements

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

Hazard pictograms (CLP) :



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, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P243 - Take precautionary measures against static discharge  
P273 - Avoid release to the environment  
P281 - Use personal protective equipment as required  
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely  
P381 - Eliminate all ignition sources if safe to do so  
P410+P403 - Protect from sunlight. Store in a well-ventilated place

#### 2.3. Other hazards

No additional information available

### SECTION 3: Composition/information on ingredients

#### 3.1. Substance

Name : ETHYLENE  
CAS No : 74-85-1  
EC No : 200-815-3

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Ethylene	(CAS No) 74-85-1 (EC No) 200-815-3 (EC Index No) 601-010-00-3	> 99.9	Flam. Gas 1, H220 Press. Gas STOT SE 3, H336

Full text of H-statements: see section 16

#### 3.2. Mixture

Not applicable

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general : Get medical advice/attention if you feel unwell.  
First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration. Place under medical observation.



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First-aid measures after skin contact	: Wash skin with plenty of water. Remove/Take off immediately all contaminated clothing. In the event of contact with the liquid: treat resulting frostbite as a burn. Do not remove clothing adhering to the skin. In case of severe burns, seek hospital treatment.
First-aid measures after eye contact	: Do not wear contact lenses. Rinse immediately with plenty of water. Consult an eye specialist.
First-aid measures after ingestion	: Ingestion during handling is not likely. If necessary seek medical advice.

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

Symptoms/effects	: Refer to § 11 for more details on effects.
Symptoms/effects after inhalation	: In case of inhalation of high concentrations : Dizziness, headaches, nausea. Drowsiness. Unconsciousness. anoxia (asphyxia). May cause respiratory irritation.
Symptoms/effects after skin contact	: Contact with the product may cause cold burns or frostbite.
Symptoms/effects after eye contact	: Direct contact with the liquefied gas may cause severe and possibly permanent eye injury due to frostbite from rapid liquid evaporation. Eye irritation.

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

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Carbon dioxide. Dry powder. Foam.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: Extremely flammable gas.
Hazardous decomposition products in case of fire	: Thermal decomposition generates : Toxic fumes. Carbon oxides (CO, CO <sub>2</sub> ). Hydrocarbons. Aldehydes. Ketones.

### 5.3. Advice for firefighters

Precautionary measures fire	: Remove all sources of ignition. Heat may cause pressure rise with explosion of tanks/drums. Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Complete protective clothing. Self-contained breathing apparatus.
Other information	: Notify fire brigade and environmental authorities. Evacuate unnecessary personnel. Use water spray or fog for cooling exposed containers.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Evacuate unnecessary personnel. Use special care to avoid static electric charges. Do not smoke. No flames, no sparks. Eliminate all sources of ignition.
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#### 6.1.1. For non-emergency personnel

Emergency procedures for non-emergency personnel	: Only qualified personnel equipped with suitable protective equipment may intervene.
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#### 6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment.
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### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

For containment	: Stop leak without risks if possible. Risk of ignition at distance.
Methods for cleaning up	: Product evaporates when in contact with the air.

### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling	: Prevent shock/impact. In use, may form flammable/explosive vapour-air mixture. Provide good ventilation in process area to prevent formation of vapour. Use only outdoors or in a well-ventilated area. Take precautionary measures against static discharge during blending and transfer operations. Explosion-free electrical equipment and lighting with earth.
Hygiene measures	: Keep away from food and drink. Always wash hands after handling the product. Do not eat, drink or smoke when using this product.



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### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep away from ignition sources. Proper grounding procedures to avoid static electricity should be followed. Explosive vapour/air mixtures may be formed. Containers (tanks) should be grounded and provided with adequate pressure relief valve. Store in a well-ventilated place. Keep container tightly closed. Protect from heat and direct sunlight.
- Special rules on packaging : Keep only in original container.
- Packaging materials : Stainless steel.

### 7.3. Specific end use(s)

Recommended to professional users.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Ethylene (74-85-1)		
Ireland	OEL (8 hours ref) (ppm)	200 ppm
USA - ACGIH	Local name	Ethylene
USA - ACGIH	ACGIH TWA (ppm)	200 ppm

### 8.2. Exposure controls

- Appropriate engineering controls : The substance is classified as extremely flammable and therefore the following conditions must be met to ensure safe use: "Risks are controlled by storage and use under conditions which avoid all ignition sources."  
. Safety shower. Eye fountain.
- Hand protection : cold-insulating gloves
- Eye protection : Do not wear contact lenses. Safety glasses
- Skin and body protection : Wear suitable protective clothing. Safety foot-wear
- Respiratory protection : Ensure good ventilation of the work station. In case of insufficient ventilation, wear suitable respiratory equipment



Environmental exposure controls : Avoid release to the environment.

Other information : Do not eat, drink or smoke during use. Handle in accordance with good industrial hygiene and safety procedures.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

- Physical state : Gas
- Appearance : Gases under pressure. Pressurized liquefied gas.
- Molecular mass : 28 g/mol
- Colour : Colourless.
- Odour : Odourless. Faint hydrocarbon.
- 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 : No data available
- Auto-ignition temperature : 490 °C
- Decomposition temperature : No data available
- Flammability (solid, gas) : Extremely flammable gas
- Vapour pressure : 2124 hPa (T= -90°C)
- Relative vapour density at 20 °C : No data available
- Relative density : No data available



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Solubility	: Soluble in aromatic hydrocarbons. Soluble in most organic solvents. Water: 131 mg/l
Log Pow	: 1.13
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 2.7 vol % 36 vol %

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Extremely flammable gas.

### 10.2. Chemical stability

Spontaneous polymerisation.

### 10.3. Possibility of hazardous reactions

In use may form flammable/explosive vapour-air mixture.

### 10.4. Conditions to avoid

Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition. Avoid the build-up of electrostatic charge.

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness

#### ETHYLENE (74-85-1)

LC50 inhalation rat	> 65400 mg/m <sup>3</sup>
Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: Contact with the product may cause cold burns or frostbite
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: May cause eye irritation
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Do not allow product to spread into the environment.

#### Ethylene (74-85-1)

LC50 fish 1	126.012 mg/l QSAR calculation (ECHA)
LC50 other aquatic organisms 1	62.482 mg/l QSAR calculation (ECHA) (daphnid)
EC50 other aquatic organisms 1	40.5 mg/l 72hr EbC50 for Selenastrum capricornutum (biomass) (ECHA)
EC50 other aquatic organisms 2	72.2 mg/l 72hr EC50 for Selenastrum capricornutum (growth rate) (ECHA)
NOEC (acute)	13.9 mg/l 72hr NOEC for Selenastrum capricornutum (growth rate) (ECHA)



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### 12.2. Persistence and degradability

#### ETHYLENE (74-85-1)

Persistence and degradability	Inherently biodegradable. Product is expected to undergo degradation in the presence of sunlight.
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### 12.3. Bioaccumulative potential

#### ETHYLENE (74-85-1)

Log Pow	1.13
Bioaccumulative potential	Low bioaccumulation potential.

#### Ethylene (74-85-1)

Log Pow	1.13
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### 12.4. Mobility in soil

#### ETHYLENE (74-85-1)

Ecology - soil	because of its high volatility, the product is unlikely to cause ground or water pollution.
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### 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)	: Disposal must be done according to official regulations.
Waste treatment methods	: Do not discharge the product into the environment. Hazardous waste. Dispose of in accordance with relevant local regulations. Use only registered transporters. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.
Additional information	: Handle empty containers with care because residual vapours are flammable. Flammable vapours may accumulate in the container.

## SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN Number</b>				
1962	1962	1962	1962	1962
<b>14.2. UN proper shipping name</b>				
ETHYLENE	ETHYLENE	Ethylene	ETHYLENE	ETHYLENE
<b>Transport document description</b>				
UN 1962 ETHYLENE, 2.1, (B/D)	UN 1962 ETHYLENE, 2.1	UN 1962 Ethylene, 2.1	UN 1962 ETHYLENE, 2.1	UN 1962 ETHYLENE, 2.1
<b>14.3. Transport hazard class(es)</b>				
2.1	2.1	2.1	2.1	2.1
				
<b>14.4. Packing Group</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>				
Dangerous for the environment : No	Dangerous for the environment : No Marine Pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

### 14.6. Special precautions for user

#### - Overland transport

Classification code (ADR)	: 2F
Limited quantities (ADR)	: 0
Excepted quantities (ADR)	: E0
Packing instructions (ADR)	: P200
Mixed packing provisions (ADR)	: MP9



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Portable tank and bulk container instructions (ADR) : (M)  
Tank code (ADR) : PxBN(M)  
Tank special provisions (ADR) : TA4, TT9  
Vehicle for tank carriage : FL  
Transport category (ADR) : 2  
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36  
Special provisions for carriage - Operation (ADR) : S2, S20  
Hazard identification number (Kemler No.) : 23  
Orange plates :



Tunnel restriction code (ADR) : B/D  
EAC code : 2SE

### - Transport by sea (IMDG)

Limited quantities (IMDG) : 0  
Excepted quantities (IMDG) : E0  
Packing instructions (IMDG) : P200  
EmS-No. (Fire) : F-D  
EmS-No. (Spillage) : S-U  
Stowage category (IMDG) : E

### - Air transport (IATA)

PCA Excepted quantities (IATA) : E0  
PCA Limited quantities (IATA) : Forbidden  
PCA limited quantity max net quantity (IATA) : Forbidden  
PCA packing instructions (IATA) : Forbidden  
PCA max net quantity (IATA) : Forbidden  
CAO packing instructions (IATA) : 200  
CAO max net quantity (IATA) : 150kg  
Special provisions (IATA) : A1  
ERG code (IATA) : 10A

### - Inland waterway transport

Classification code (ADN) : 2F  
Limited quantities (ADN) : 0  
Excepted quantities (ADN) : E0  
Equipment required (ADN) : PP, EX, A  
Ventilation (ADN) : VE01  
Number of blue cones/lights (ADN) : 1

### - Rail transport

Classification code (RID) : 2F  
Limited quantities (RID) : 0  
Excepted quantities (RID) : E0  
Packing instructions (RID) : P200  
Mixed packing provisions (RID) : MP9  
Portable tank and bulk container instructions (RID) : (M)  
Tank codes for RID tanks (RID) : PxBN(M)  
Special provisions for RID tanks (RID) : TU38, TE22, TA4, TT9, TM6  
Transport category (RID) : 2  
Special provisions for carriage - Loading, unloading and handling (RID) : CW9, CW10, CW36  
Colis express (express parcels) (RID) : CE3  
Hazard identification number (RID) : 23



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### 14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable

## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

ETHYLENE is not on the REACH Candidate List

ETHYLENE is not on the REACH Annex XIV List

#### 15.1.2. National regulations

Complies the United States TSCA (Toxic Substances Control Act) inventory

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Canadian DSL (Domestic Substances List)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Korean ECL (Existing Chemicals List)

Listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS)

Listed on the China Inventory of Existing Chemical Substances (IECSC)

Listed on NZIoC (New Zealand Inventory of Chemicals)

### 15.2. Chemical safety assessment

The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures

## SECTION 16: Other information

Training advice : Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.

Other information : Use good personal hygiene practices.

Full text of H- and EUH-statements:

Compressed gas	Gases under pressure : Compressed gas
Flam. Gas 1	Flammable gases, Category 1
Press. Gas	Gases under pressure
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
H336	May cause drowsiness or dizziness

SDS EU (REACH Annex II)

*This information applies to the PRODUCT AS SUCH and conforming to specifications of TOTAL.*

*In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.*

*The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.*

*Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.*

*The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.*

*It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.*

*It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.*

