Ethylene

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

1.1. Product identifier

Name of product	Ethylene
Art-Nr(n).:	1300-1309
Name of substance	ethylene
Index No	601-010-00-3
EC No	200-815-3
REACH registration number	01-2119462827-27
CAS No	74-85-1

Manufacturer / Distributor:

Ehsan International Gases
40/9, Aurangabad, Nazimabad #3, Karachi 74600, Pakistan.
+92 21 36612091 – 36612907
info@ehsan.com.pk
www.ehsan.com.pk

1.2. Relevant identified uses of the substance or mixture and uses advised against
Recommended intended purpose(s)
Refrigerant.
Fuel gas.
Basic substance.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to 67/548/EEC or 1999/45/EC

F+; R12
R67

R-phrases

12	Extremely flammable.
67	Vapours may cause drowsiness and dizziness.

Additional hints
Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

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

Hazard classes and Hazard Hazard Statements Classification procedure categories

Flam. Gas 1	**H220**	
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]		
Hazard classes and Hazard categories	**Hazard Statements**	**Classification procedure**
Liquef. Gas	**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.**

Additional hints
Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

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

GHS02

GHS07

Signal word
Danger

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.**

Precautionary Statements

Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P260	Do not breathe gas/vapours.

Response

P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P315	Get immediate medical advice/attention.
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381	Eliminate all ignition sources if safe to do so.

Storage

P410 + P403	Protect from sunlight. Store in a well-ventilated place.

Hazardous ingredients for labeling
ethylene

2.3. Other hazards
Information pertaining to special dangers for human and environment
In high concentrations may cause asphyxiation.
Contact with liquid may cause cold burns/frostbite.

Results of PBT and vPvB assessment
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

SECTION 3: Composition/ information on ingredients

3.1. Substances

CAS No 74-85-1 **ethylene**
EC No 200-815-3
Index No 601-010-00-3
REACH registration number 01-2119462827-27

3.2. Mixtures
not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
General information
Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.
Seek medical advice immediately.

In case of inhalation
Remove the casualty into fresh air and keep him immobile.
Seek medical treatment immediately.
In case of respiratory standstill give artifical respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact
In case of contact with skin wash off with warm water.
In case of frostbite rinse with plenty of water. Don`t remove clothing.
In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

! **In case of eye contact**
Rinse cautiously with water for several minuts. Remove contact lenses, if present and easy to do. Continue rinsing.
Call for a doctor immediately.

In case of ingestion
Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed
Physician's information / possible symptoms
Shortness of breath
Headache
Nausea
Confusion
Dizziness

Physician's information / possible dangers In low concentrations may cause narcotic effects.

4.3. Indication of any immediate medical attention and special treatment needed
Treatment (Advice to doctor) Monitor circulation.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media
Dry powder
Water spray jet

Unsuitable extinguishing media
carbon dioxide Full water jet

5.2. Special hazards arising from the substance or mixture
In case of fire formation of dangerous gases possible.
Formation of explosive gas mixtures in air.
In the event of fire the following can be released:
Carbon monoxide (CO)

5.3. Advice for firefighters
Special protective equipment for fire-fighters
Use breathing apparatus with independent air supply (isolated). Wear full protective clothing.

Additional information
Cool endangered containers with water spray jet.
Exposure to fire may cause containers to rupture / explode.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.
Extinguish any other fire.
Collect contaminated firefighting water separately, must not be discharged into the drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
! **For non-emergency personnel**
Evacuate area.

! **For emergency responders**
Personal protection by wearing close-fitting protective clothing and breathing apparatus.
Keep people away and stay on the upwind side.
Eliminate all ignition sources if safe to do so.
Keep away sources of ignition.

6.2. Environmental precautions
If possible, stop flow of product.
Eliminate ignition sources.
Do not discharge into the drains/surface waters/groundwater.
Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up
Ensure adequate air ventilation. Allow to vaporise.

6.4. Reference to other sections
Informations for safe handling see chapter 7.
Informations for personal protective equipment see chapter 8.

Ethylene

SECTION 7: Handling and storage

7.1. Precautions for safe handling

! **Advice on safe handling**

Use only in thoroughly ventilated areas.
Transfer and handle only in enclosed systems.
Containers' temperature may not be increased above 50 °C.
Do not heat with open flames.
The working pressure in the receptacle must not exceed 2/3 of the test pressure of the pressure receptacle.
Take measures against electrostatically charging.
Barrels and installations thoroughly earthing (grounding).
Use antistatic tools.
Treatment only in suitable rooms and systems.
Prevent cylinders from falling over.
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 backfeed into the container.
Suck back 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.

General protective measures

Do not inhale gases.

Hygiene measures

At work do not eat, drink and smoke.

Advice on protection against fire and explosion

The product is combustible.
Because of risk of explosion avoid vapours getting into cellar, sewage system and holes. Take precautionary measures against static discharges.
Formation of explosive gas mixtures in air.
Use explosion-proof equipment / fittings and non-sparking tools.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep in closed original container.
Ventilate store-rooms thoroughly.
Use transportable pressure equipment.
Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel. Valve:
Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

Advice on storage compatibility

Do not store with spontaneously flammable materials.
Do not store together with combustible liquids or combustible solids.
Do not store together with animal feedstuffs.
Do not store together with explosives.
Do not store together with infectious substances.
Do not store together with radioactive material.
Do not store together with toxic liquids or toxic solids.
Do not store together with food.
Do not store together with oxidizing agents.

Further information on storage conditions

Ensure valve protection device is correctly fitted.
Keep container tightly closed and store at cool and aired place.

Prevent cylinders from falling over. Keep container in a well-ventilated place
Protect of heat.
Storage temperature may not exceed 50°C (=122°F).

7.3. Specific end use(s)
Recommendation(s) for intended use
No further recommendations.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Additional advice
DNEL / DMEL values are not available.

8.2. Exposure controls
Respiratory protection
Keep self contained breathing apparatus readily available for emergency use.
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 by edging out of air oxygen

Hand protection
Leather gloves
Protective gloves complying with EN 374.

Eye protection
Safety goggles with side protection complying with EN 166.

Other protection measures
Safety shoes with steel toe.
Body covering work clothing, or chemical resistant suit at increased risk.

Limitation and surveillance of the environment
See chapter 7. No additional measures necessary.
PNEC values are not available.

Appropriate engineering controls
Transfer and handle only in enclosed systems.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Colour	Odour
Gaseous / liquefied under pressure.	colourless	sweetish

Odour threshold
260 ml/m³

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
melting point	-169,1 °C				
Flash point	-136 °C				
Vapourisation rate					not applicable
Flammable (solid)	not applicable				
Flammability (gas)					Flammable.
Ignition temperature	425 °C			DIN 51794	
Self ignition temperature	450 °C				
Lower explosion limit	2,4 Vol-%				
Upper explosion limit	32,6 Vol-%				
Vapour pressure	40900 hPa	0 °C			
Relative density	0,568 g/cm3	-104 °C			liquid phase
Vapour density	0,975				air = 1
Solubility in water	131 mg/l	20 °C			
Solubility/other					soluble in organic solvent
Partition coefficient noctanol/water (log P O/W)	1,13				
Decomposition temperature	No information available.				
Viscosity dynamic	0,176 mPa*s	-104 °C			liquid phase

Oxidising properties
no

Explosive properties
not applicable

9.2. Other information
Poor warning properties at low concentrations.

SECTION 10: Stability and reactivity

10.1. Reactivity
See section "Possibility of hazardous reactions".

Ethylene

10.2. Chemical stability
Stable under normal conditions.
Risk of polymerisation.

10.3. Possibility of hazardous reactions
May react violently with oxidants.
Formation of explosive gas/air mixtures.
polymerisation

10.4. Conditions to avoid
May decompose violently at high temperature and/or pressure or in the presence of a catalyst.
Formation of explosive gas/air mixtures.
Heat sources / heat - risk of bursting.

10.5. Incompatible materials
Materials to avoid
Air
Oxidising agent

10.6. Hazardous decomposition products
No hazardous decomposition products known.

Thermal decomposition

Remark	No decomposition if used as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LC50 acute inhalation	> 57000 ppm (4 h)	Rat (male)		
Irritability skin	non-irritant			
Irritability eye	non-irritant			
Skin sensitization	not determined			
Sensitization respiratory system	not determined			

Ethylene

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 126 mg/l (96 h)	Fish	QSAR	
Daphnia	EC50 62,5 mg/l (48 h)	Daphnia	QSAR	
Algae	EC50 40,5 mg/l (72 h)	Pseudokirchneriella subcapitata	OECD 201, cell reproduction	
Bacteria	not determined			

12.2. Persistence and degradability

Physico-chemical degradability

At normal temperature very highly volatile or gaseous product that can be released to atmosphere. Elimination test cannot be employed.

Biological degradability	50 % (2,9 d)	QSAR	readily degradable

Information on biodegradation processes is available.

12.3. Bioaccumulative potential

Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is not expected.

12.4. Mobility in soil

high mobility
Adsorption in the soil is not likely.

12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6. Other adverse effects

ODP: 0
GWP: 3

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste code No.	**Name of waste**
16 05 04*	gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 2008/98/EC on hazardous waste.

Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

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

Ethylene

SECTION 14: Transport information

	ADR/RID	IMDG	IATA-DGR
14.1. UN number	1962	1962	1962
14.2. UN proper shipping name	ETHYLENE	ETHYLENE	Ethylene
14.3. Transport hazard class(es)	2	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. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not applicable
No transport as bulk according IBC - Code.

Land and inland navigation transport ADR/RID
Hazard label(s) 2.1 tunnel restriction code B/D
Classification code 2F

Marine transport IMDG
Ems: F-D, S-U
Air transport ICAO/IATA-DGR
Cargo aircraft only.
Cargo aircraft only: Package max. 150 kg.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Other regulations (EU)
Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 40.
Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

VOC standard
VOC content >=99 % 0 °C 40900 hPa

15.2. Chemical Safety Assessment
For this substance a chemical safety assessment has been carried out.
An exposure scenario is not required.

SECTION 16: Other information

Recommended uses and restrictions
National and local regulations concerning chemicals shall be observed.

Further information
All declarations of safety-data-sheet refer to pure substance.

Ethylene

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.

Indication of changes: "!" = Data changed compared with the previous version. Previous version: 10.2