



SAFETY DATA SHEET (SDS)

ETHYLENE

1. Identification

SDS record number	:	PCS 95001	
Date of SDS	:	01 September 2023	
Identity of the substance	:	Ethylene	
Product Description	:	Olefinic hydrocarbon	
Other names/synonyms	:	Ethene, Acetene, Liquid Ethylene	
Name of the supplier	:	PCS Pte. Ltd.	
Recommended uses	:	Chemical feedstock	
Contact detail of the supplier	:	100 Ayer Merbau Road, Singapore 628277	
		+65 68672102	
24-Hour Emergency contact	:	Asia Pacific	+65 3158 1074 (Singapore)
		China	400 120 6011
		Europe, Israel & Americas	+44 (0) 1235 239 670 (UK)
		Middle East & Africa	+44 (0) 1235 239 671 (UK)

2. Hazards Identification

GHS Classification

<u>Hazard Class</u>	<u>Hazard Category</u>
• Flammable Gas	1A
• Gases under pressure	Liquefied gas
• STOT (Single Exposure)	3 (narcotic effects)

Pictograms



Signal Word: Danger

Hazard Statements

- Extremely flammable gas
- Contains gas under pressure; may explode if heated
- May cause drowsiness or dizziness

Precautionary Statements

Prevention

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



Response

- Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- In case of leakage, eliminate all ignition sources.
- If INHALED: Remove person to fresh air and keep comfortable for breathing.
- Call a POISON CENTER/doctor/physician if you feel unwell.

Storage

- Store in a well-ventilated place. Keep container tightly closed.
- Protect from sunlight. Store in well-ventilated place.
- Store locked up.

Disposal

- Dispose of the contents in accordance to the local mandatory rules and regulations

Other Hazards which do not result in classification:

- High gas concentrations will displace available oxygen from the air, unconsciousness and death may occur suddenly from lack of oxygen

3. Composition/Information On Ingredients

Chemical identification : Ethylene
Common name(s) / synonym(s) : Ethylene, Ethene, Acetene, Liquid Ethylene
CAS number / EC number : 74-85-1 / 200-815-3

Chemical Identification	CAS number	Concentration
Ethylene	74-85-1	≥ 99.9 wt%

4. First-Aid Measures

Inhalation: In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

Eye contact: First aid is normally not required.

Skin contact: In case of cold burns caused by rapidly expanding gas or vaporising liquid, get prompt medical attention.

Ingestion: First aid is not applicable.

5. Fire-Fighting Measures

Extinguishing media

- Use water spray to cool fire exposed surfaces and to protect personnel.
- Shut off fuel to fire if possible to do so without hazard.
- If a leak or spill has not ignited use water spray to disperse the vapours.
- Extinguish small residual fires with dry chemical powder or water spray.
- Try to cover liquid spills with foam.
- Do not extinguish flames at leak because possibility of uncontrolled explosive re-ignition exists.
- Cut off fuel and/or allow fire to burn out.



Special protective equipment and precautions for fire fighters

- A self-contained breathing apparatus (SCBA) is recommended for indoor fires and any significant outdoor fires.
 - For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA is optional.
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6. Accidental Release Measures

- Personal protection: chemical protection suit including self-contained breathing apparatus.
 - Notify the appropriate authorities immediately.
 - Take all additional action necessary to prevent and remedy the adverse effects of the spill.
 - Keep public away.
 - Prevent additional discharge of material, if possible to do so without hazard.
 - Warn occupants and shipping in surrounding and downwind areas of fire and explosion hazard and request all to stay clear.
 - Allow spillage to evaporate.
 - Evacuate danger area
 - Provide adequate ventilation.
 - Remove all ignition sources and turn off gas at source if possible.
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7. Handling And Storage

Precautions for safe handling

- Keep container closed. Handle and open containers with care.
- Do not handle or store near an open flame, heat, or other sources of ignition.
- Empty product containers may contain product residue.
- Do not reuse empty containers without commercial cleaning or reconditioning.
- Do not pressurize, cut, heat, or weld containers.
- Do not breathe gas. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Conditions for safe storage, including any incompatibilities

- Store in a cool, well-ventilated place.
 - Protect material from direct sunlight.
 - Material will accumulate static charges, which may cause an electrical spark (ignition source).
 - Use proper earthing (grounding) procedures.
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8. Exposure Controls/Personal Protection

Control Parameters/ Exposure Limits

- Ethylene (CAS: 74-85-1)
TLV: 200 ppm as TWA; (ACGIH)

Appropriate Engineering Controls

- The use of mechanical ventilation is recommended whenever this material is used in a confined space to maintain airborne concentrations below recommended occupational exposure limits.
- Use explosion-proof ventilation equipment.

Personal Protective Equipment (PPE)

- The selection of personal protective equipment varies depending upon conditions of use.
- Where prolonged and/or repeated eye contact is likely to occur, wear gas-proof goggles.



- Where eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear gas-proof goggles.
- Where it is likely that frostbite hazards may occur from vaporising liquid and expanding vapour, prevent contact with eyes and skin.
- Wear safety glasses with side shields, long sleeves and insulating gloves.
- **Personal protection:** chemical protection suit including self-contained breathing apparatus.
- High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area

9. Physical And Chemical Properties

Property	Value, Description
Appearance (physical state, colour etc);	Colourless gas
Odour	Faint sweet odour
Odour threshold	Not available
pH	Not applicable
Melting/freezing point	-169°C
Initial boiling point and boiling range	-104°C
Flash point	-100°C Closed Cup
Evaporation rate	Not applicable
Flammability	Extremely flammable, can form explosive mixtures with air
Upper/lower explosive limits/ flammability limit	2.7 to 28.6% by volume
Vapour pressure	5,168 kPa at 10°C
Relative vapour density	0.974 @ 1.013 bar, 0°C (Air = 1)
Density and/or Relative density	1.178 kg/m ³ @ 1.013 bar, 15°C
Solubility	Solubility in Water: 0.01% at 20°C
Partition coefficient: n-octanol/water (log value)	Not available
Auto-ignition temperature	450°C
Decomposition temperature	Not available
Kinematic Viscosity @ 50 °C (cSt)	0.4 cSt at -50°C (Approximate)
Particle characteristics	Not applicable

10. Stability And Reactivity

Reactivity/Chemical stability: Product is stable under normal operating conditions.

Possibility of hazardous reactions: Contamination can cause self-reaction.

Conditions to avoid: it will vigorously polymerize, decompose, condense or become self-reactive under conditions of shock, pressure or temperature.

Incompatible materials: Inorganic acids, organic acids, molten sulphur, halogens, halogenated compounds, nitrogen dioxide, methyl chloride, carbon tetrachloride, trifluoromethyl hypofluorite, ozone, chlorine, nitromethane, aluminium chloride, oxidizing agents



When 5A molecular sieves were used to dry a compressed ethylene gas stream, an exothermic reaction took place and may cause an explosion. Smaller 3A molecular sieves are not catalytically active toward ethylene.

Hazardous decomposition products: Thermal decomposition or burning may produce CO and CO₂.

- The substance may polymerize to form aromatic compounds under the influence of temperatures above 600°C.
- Reacts with strong oxidants causing fire and explosion hazard.

11. Toxicological Information

Inhalation: Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Causes suffocation (asphyxiant) if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.

Eye contact: Exposure to rapidly expanding gas or vaporising liquids may cause frostbite (cold burns) or tissue damage.

Skin contact: Exposure to rapidly expanding gas or vaporising liquid may cause frostbite (cold burn). Not considered to be a hazard. In case of frostbite, place affected area in warm water until circulation returns.

Ingestion: Not considered to be a hazard.

Chronic: In high exposure animal studies with ethylene, there was evidence of slight changes in liver metabolism. The relationship of these studies to humans has not been fully established.

12. Ecological Information

No data on possible ecological toxicity.

13. Disposal Considerations

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. Transport Information

Land (ADR)

UN Number: 1962

UN proper shipping name: ETHYLENE

Class: 2

Packing Group: Not assigned

Labels: 2.1

Hazard Identification Number: 23

Air (IATA)



UN Number: 1962
UN proper shipping name: ETHYLENE
Class: 2
Packing Group: Not assigned
Labels: 2.1

Sea (IMDG)

UN Number: 1962
UN proper shipping name: ETHYLENE
Class: 2
Packing Group: Not assigned
Labels: 2.1
Marine pollutant: No

Transport in Bulk (Annex II of MARPOL 73/78 and the IBC code)

Not applicable

15. Regulatory Information

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations:
This product is subject to the SDS, labelling and PEL and other requirements in the Act/Regulations.

Fire Safety Act and Fire Safety (Petroleum and Flammable Materials) Regulations:
This product is subject to the requirements of this Regulations.

Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations:
This product is subject to the requirements of this Regulations.

Chemical inventory status:

Australia, AIC: Yes
China, IECSC: Yes
Japan, ENCS: Yes
USA, TSCA: Yes

16. Other Information

Prepared By: Material Safety Committee
SDS Prepared on: 1/10/2010
Reviewed 1 on: 1/10/2013
Reviewed 2 on: 1/9/2018
Revised 3 on: 1/9/2023

Revision (3) Notes	
1	Revised according to SS 586-3:2022
2	Sect. 2: Revised Flammable Gas hazard to Cat 1A, according to SS 586-2:2022
3	Sect. 14: Added relevant transport information
4	Sect. 15: Included applicable national regulations (Singapore)

CAUTION: The information given above (“the Information”) relates only to the substance or mixture listed herein. The Information may not be valid when used in combination with any other substance or mixture or in any process. If the substance or mixture is to be used for a purpose other than that stated herein or under conditions other than specified herein, the Information cannot be relied upon as being complete or accurate, and the user is advised to consult the supplier before using the substance or mixture for such other purpose or under such other conditions. The Information is given based on



Revised 3 on 1/9/2023

information available at the indicated date of preparation and no representation or warranty is given that it will be correct as of any time after the indicated date of preparation.

GHS Label

Ethylene



DANGER

Hazard Statements

- Extremely flammable gas
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Precautionary Statements

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- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Use only outdoors or in well-ventilated area.

For further information on this product, refer to Manufacturer's Safety Data Sheet

Contact detail of the supplier : 100 Ayer Merbau Road, Singapore 628277

Emergency contact : +65 68672102