

Safety Data Sheet

Product :	Ethylene oxide	Page :1/5
MSDS Nr : 362-00-0001BOC(A)	Version : 1.03	Date : 18/03/2008
		Replaces version dated : 11/12/1995

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name	Ethylene oxide
Chemical formula	C ₂ H ₄ O
Company identification	see heading and/or footer
Emergency phone numbers	see heading and/or footer

2 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation	Substance.
Components/Impurities	Contains no other components or impurities which will influence the classification of the product.
CAS Nr	75-21-8
EC Nr (from EINECS)	200-849-9

3 HAZARDS IDENTIFICATION

Hazards identification	Liquefied gas May cause heritable genetic damage May cause cancer. Extremely flammable Toxic by inhalation. Irritating to eyes, respiratory system and skin.
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4 FIRST AID MEASURES

Inhalation	Toxic by inhalation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Delayed adverse effects possible.
Skin/eye contact	May cause chemical burns to skin and cornea (with temporary disturbance to vision) Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contaminated clothing Obtain medical assistance
Ingestion	Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards	Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	Incomplete combustion may form carbon monoxide.
Suitable extinguishing media	All known extinguishants can be used.
Specific methods	If possible, stop flow of product. Continue water spray from protected position until container stays cool. Move away from the container and cool with water from a protected position.

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Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

Special protective equipment for fire fighters

Use self-contained breathing apparatus.

Use chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions

Evacuate area.

Use self-contained breathing apparatus and chemically protective clothing.

Eliminate ignition sources.

Ensure adequate air ventilation.

Environmental precautions

Try to stop release.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Clean up methods

Ventilate area.

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated.

(Ground free from frost).

7 HANDLING AND STORAGE

Handling and storage

Ensure equipment is adequately earthed.

Suck back of water into the container must be prevented.

Purge air from system before introducing gas.

Do not allow backfeed into the container.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Keep away from ignition sources (including static discharges).

Segregate from oxidant gases and other oxidants in store.

Refer to supplier's container handling instructions.

Keep container below 50°C in a well ventilated place.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value for country

UK: Ethylene oxide - LTEL: 5ppm (EH40/2005)

Personal protection

Ensure adequate ventilation.

Protect eyes, face and skin from liquid splashes.

Do not smoke while handling product.

Keep self contained breathing apparatus readily available for emergency use.

Keep suitable chemically resistant protective clothing readily available for emergency use.

9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight

44.053

Melting point

-112 °C

Boiling point

10.4 °C

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Critical temperature	196 °C
Relative density, gas	1.5 (air=1)
Relative density, liquid	0.89 (water=1)
Vapour Pressure 20°C	1.4 bar
Solubility mg/l water	No reliable data available.
Appearance/Colour	Colourless gas
Odour	Ethereal
	Poor warning properties at low concentrations.
Flammability range	3-100 vol% in air.
Autoignition temperature	440 °C
Other data	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10 STABILITY AND REACTIVITY

Stability and reactivity

- Can form explosive mixture with air.
- May react violently with oxidants.
- May decompose violently at high temperature and/or pressure or in the presence of a catalyst
- May polymerise.
- Inhibitor usually added.

11 TOXICOLOGICAL INFORMATION

General

- May have carcinogenic effect.
- Damage to red blood cells (haemolytic poison).
- May cause irritation to the respiratory tract.

LC50/1h (ppm)

2900 ppm

12 ECOLOGICAL INFORMATION

General

- No known ecological damage caused by this product.

13 DISPOSAL CONSIDERATIONS

General

- Avoid discharge to atmosphere.
- Do not discharge into any place where its accumulation could be dangerous.
- Do not discharge into areas where there is a risk of forming an explosive mixture with air.
- Waste gas should be flared through a suitable burner with flash back arrestor.
- Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

Proper shipping name	ETHYLENE OXIDE
UN Nr	1040
Class	2
ADR/RID Classification code	2TF

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ADR/RID Hazard Nr	263
Packing group	None
Labelling ADR	Label 2.3: toxic substance. Label 2.1: flammable gas
IMDG EmS codes	F-D, S-U
IMDG Marine pollutant	No
IATA passenger packing instruction	Forbidden
IATA passenger max. quantity/pack	Forbidden
IATA cargo packing instruction	Forbidden
IATA cargo max. quantity/pack	Forbidden
Other transport information	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured and: - cylinder valve is closed and not leaking - valve outlet cap nut or plug (where provided) is correctly fitted - valve protection device (where provided) is correctly fitted - there is adequate ventilation. - compliance with applicable regulations.

15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548	603-023-00-X.
EC Classification	F+;R12 Carc.Cat.2;R45 Muta.Cat.2;R46 T;R23 Xi;R36/37/38
-Symbols	F+: Extremely flammable T: Toxic
Labelling of cylinders	
-Symbols	Label 2.3: toxic substance. Label 2.1: flammable gas
-Risk phrases	R12 Extremely flammable. R23 Toxic by inhalation. R36/37/38 Irritating to eyes, respiratory system and skin. R45 May cause cancer. R46 May cause heritable genetic damage
-Safety phrases	S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S53 Avoid exposure, obtain special instructions before use.

16 OTHER INFORMATION

Ensure all national/local regulations are observed.
Ensure operators understand the flammability hazard.
Users of breathing apparatus must be trained.

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Ensure operators understand the toxicity hazard.

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

End of document.

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