

## Ethylene oxide

**AL069**


F+ : Extremely flammable



T : Toxic



Label 2.3 : Toxic gas.



Label 2.1 : flammable gas.

### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Trade name** : Ethylene oxide  
**MSDS Nr** : AL069  
**Use** : Analytical reagent. Fumigant. Industrial applications. Manufacturing. Steriliser.  
**Chemical formula** : C<sub>2</sub>H<sub>4</sub>O  
**Company identification** : Air Liquide  
 Level 9, 380 St.Kilda Road  
 3004 Melbourne AUSTRALIA  
**Emergency phone nr** : 1800 812 588

### 2 HAZARDS IDENTIFICATION

**Hazard classification** : Classified as hazardous according to NOHSC criteria.  
 Classified as a dangerous good by the criteria of the ADG code.

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

**R Phrase(s)** : 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.

**S Phrase(s)** : S45 : In case of accident or if you feel unwell, seek medical advice immediately ( show the label when possible). - S53 : Avoid exposure - obtain special instructions before use.

### 3 COMPOSITION/INFORMATION ON INGREDIENTS

**Substance / Preparation** : Substance.

| Substance name | Contents | CAS No  | EC No     | Annex No     | Classification   |
|----------------|----------|---------|-----------|--------------|--|
| Ethylene oxide | 100 %    | 75-21-8 | 200-849-9 | 603-023-00-X | F+; R12<br>Carc. Cat. 2; R45<br>Muta. Cat. 2; R46<br>T; R23<br>Xi; R36/37/38 |

Contains no other components or impurities which will influence the classification of the product.

### 4 FIRST AID MEASURES

**First aid measures**

**- Inhalation** : Toxic by inhalation.  
 In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.  
 In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.



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### 4 FIRST AID MEASURES (continued)

- **Skin/eye contact** : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.  
: Remove contaminated clothing.  
Obtain medical assistance.  
Immediately flush eyes thoroughly with water for at least 15 minutes.  
May cause chemical burns to skin and cornea (with temporary disturbance to vision).
- **Ingestion** : Ingestion is not considered a potential route of exposure.

### 5 FIRE-FIGHTING MEASURES

- Flammable class** : Extremely flammable.
- Specific hazards** : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products** : Incomplete combustion may form carbon monoxide.
- Extinguishing media**
- **Suitable extinguishing media** : All known extinguishants can be used.
- Specific methods** : If possible, stop flow of product.  
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.  
Move away from the container and cool with water from a protected position.
- Special protective equipment for fire fighters** : Use self-contained breathing apparatus and chemically protective clothing.

### 6 ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Evacuate area.  
Use self-contained breathing apparatus and chemically protective clothing.  
Eliminate ignition sources.  
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.  
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.  
Reduce vapour with fog or fine water spray.
- Clean up methods** : Ventilate area.  
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).  
Hose down area with water.  
Wash contaminated equipment or sites of leaks with copious quantities of water.

### 7 HANDLING AND STORAGE

- Storage** : Segregate from oxidant gases and other oxidants in store.  
Keep container below 50°C in a well ventilated place.
- Handling** : 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).

**Ethylene oxide****AL069****7 HANDLING AND STORAGE (continued)**

Refer to supplier's container handling instructions.

**8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

- Personal protection** : Keep suitable chemically resistant protective clothing readily available for emergency use.  
Keep self contained breathing apparatus readily available for emergency use.  
Do not smoke while handling product.  
Ensure adequate ventilation.  
Protect eyes, face and skin from liquid splashes.
- Occupational Exposure Limits** : Ethylene oxide : TLV© -TWA [ppm] : 1

**9 PHYSICAL AND CHEMICAL PROPERTIES**

- Physical state at 20 °C** : Liquefied gas.
- Colour** : Colourless.
- Odour** : Ethereal. Poor warning properties at low concentrations.
- Molecular weight** : 44
- Melting point [°C]** : -112
- Boiling point [°C]** : 10.4
- Critical temperature [°C]** : 196
- Vapour pressure [20°C]** : 1.4 bar
- Relative density, gas (air=1)** : 1.5
- Relative density, liquid (water=1)** : 0.89
- Solubility in water [mg/l]** : No reliable data available.
- Flammability range [vol% in air]** : 3 to 100
- Auto-ignition temperature [°C]** : 440
- 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 decompose violently at high temperature and/or pressure or in the presence of a catalyst.  
May polymerise.  
Inhibitor usually added.  
May react violently with oxidants.  
Containers are commonly pressurised to 5-7 bars with nitrogen.

**11 TOXICOLOGICAL INFORMATION**

- Toxicity information** : May cause irritation to the respiratory tract.  
Damage to red blood cells (haemolytic poison).  
May have carcinogenic effect.
- LC50 [ppm/1h]** : 2900



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## 12 ECOLOGICAL INFORMATION

**Ecological effects information** : No known ecological damage caused by this product.  
May cause pH changes in aqueous ecological systems.

## 13 DISPOSAL CONSIDERATIONS

**General** : 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.  
Do not discharge into any place where its accumulation could be dangerous.  
Avoid discharge to atmosphere.  
Contact supplier if guidance is required.

## 14 TRANSPORT INFORMATION

**UN No.** : 1040  
**Labelling ADG** : Label 2.3 : Toxic gas.  
Label 2.1 : flammable gas.  
**H.I. nr** : 263  
**Proper shipping name** : ETHYLENE OXIDE  
**HAZCHEM - Emergency Action Code** : 2PE  
: 2 = *Fine water spray.*  
*P = Risk of violent reaction or explosion. Recommended personal protective equipment : Liquid-tight chemical protective clothing and breathing apparatus. Appropriate measures : dilute.*  
*E = There may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered :*  
*1. People should be warned to stay indoors with all doors and windows closed, preferably in rooms upstairs and facing away from the incident. Ignition sources should be eliminated and any ventilation stopped.*  
*2. Effects may spread beyond the immediate vicinity. all non-essential personnel should be instructed to move at least 250 metres away from the incident.*  
*3. Police and fire brigade incident commanders should consult each other and with a product expert, or with a source of product expertise.*  
*4. The possible need for subsequent evacuation should be considered, but it should be remembered that in most cases it will be safer to remain in a building than to evacuate.*

**- ADG Class** : 2  
**- ADG Classification code** : 2 TF  
**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 containers are firmly secured.  
- Ensure cylinder valve is closed and not leaking.  
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.  
- Ensure valve protection device (where provided) is correctly fitted.  
- Ensure there is adequate ventilation.  
- Compliance with applicable regulations.

## 15 REGULATORY INFORMATION

**EC Classification** : Annex No : 603-023-00-X  
F+; R12  
Carc. Cat. 2; R45  
Muta. Cat. 2; R46

**Air Liquide**

Level 9, 380 St.Kilda Road 3004 Melbourne AUSTRALIA



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### 15 REGULATORY INFORMATION (continued)

T; R23  
Xi; R36/37/38

**EC Labelling**

**Symbol(s)**

: F+ : Extremely flammable  
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**R Phrase(s)**

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S53 : Avoid exposure - obtain special instructions before use.

### 16 OTHER INFORMATION

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

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

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.

**DISCLAIMER OF LIABILITY**

: 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.

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