

MATERIAL SAFETY DATA SHEET

Product name: **ETHYLENEIMINE**

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Date : 06/09/2006

1 IDENTIFICATION OF THE SUBSTANCE

Commercial tradename : **ETHYLENEIMINE**

Application : Intermediate for a broad spectrum of industry, adhesives, coatings, paper treatments, textile dyeing and printing, petroleum refining, fiber modification, rocket propellant fuel and in biological products.

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2 CHEMICAL CHARACTERISATION

Chemical name : Aziridine

Synonym : Azacyclopropane, Dimethyleneimine.

CAS number : [151-56-4]

EC number (EINECS) : 613-001-00-1

RTECS No : KX5075000

3 HAZARDS IDENTIFICATION

Highly flammable, toxic and dangerous for the environment.

Development of toxic and irritating fumes (or gases) in case of fire.

Dangerous: Vapour/air mixtures are explosive. Risk of fire and explosion on contacts with acid(s), oxidants.

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4 FIRST AID MEASURES

Inhalation : May cause cough, dizziness, headache, laboured breathing, nausea, vomiting. Symptoms may delayed.

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Eye contact : Redness. Pain. Severe deep burns.

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

Skin contact : May be absorbed. Redness. Skin burns. Blisters.

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.

Ingestion : Abdominal pain. Burning sensation. Vomiting. Shock or collapse. (Further see inhalation)

Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Refer for medical attention.

5 FIRE FIGHTING MEASURES

Extinguishing media : Water in large amounts, alcohol-resistant foam, powder. No carbon dioxide.

In case of fire: Keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

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6 ACCIDENTAL RELEASE MEASURES

- Personal precautions : Use during all cleaning operations protective gloves and clothing, face shield or eye protection in combination with breathing protection.
- Methods for cleaning : Evacuate danger area. Remove all ignition sources. Consult an expert. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: complete protective clothing including self-contained breathing apparatus).
- Disposal : Collect spilled material for treatment or disposal following all local, state and federal regulations.

7 HANDLING AND STORAGE

HANDLING

- Personal measures : Avoid ingestion, inhalation of vapours and skin contact. Operator should wear a protective gloves and gas mask.
- Technical measures : Ventilation. Make use of local exhaust, or breathing protection.

STORAGE

- Measures : Unbreakable packaging; put breakable packaging into closed unbreakable container.
- Fireproof. Separated from acids, oxidants, food and feedstuffs. Dry. Store only if stabilized.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

- Technical measures : Make use of local exhaust during handling.
- Respiratory protection : Ventilation, local exhaust, or gas mask.
- Hand protection : Protective gloves.
- Eye protection : Goggles or full-face mask.

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9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Fuming and colourless liquid with intense odour of ammonia.

Molecular weight : 43.07

Molecular formula : C_2H_5N

Melting point : $-74^{\circ}C$

Water solubility : Soluble

Flash point : $-11^{\circ}C$ (c.c.)

10 STABILITY AND REACTIVITY

All Ethyleneimine is stored and shipped in the presence of anhydrous sodium hydroxide and this acts both as a dehydrating agent and neutralising agent in the event the material becomes accidentally exposed to an acid atmosphere.

11 TOXICOLOGICAL INFORMATION

Oral Toxicity:

The LD_{50} of Ethyleneimine on oral ingestion of a single dose by rats is 14mg/kg. This relatively low LD_{50} indicates that Ethyleneimine is a poisonous material and extreme care should be used to avoid ingestion.

Toxicity by Absorption:

Ethyleneimine is also toxic by skin absorption. The LD_{50} for penetration of guinea pigs by poultices applied to the skin has been reported as 13mg/kg. To humans ethyleneimine is a skin sensitizer and a severe irritant to eyes, nose, and throat. Ethyleneimine is a mutagen in microbial and fruit fly tests. Ethyleneimine is classified by OSHA as a "cancer suspect" agent and detailed standards and work practices are prescribed to prevent any significant exposure by inhalation, ingestion or skin or eye contact.

12 ECOLOGICAL INFORMATION

The substance is harmful to aquatic organisms.

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13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

Any accidental spillage should be flushed immediately with copious amounts of water, and neutralised with acetic acid.

Collect as much of neutralised spilled material as possible for treatment or disposal following all local, state and federal regulations.

14 TRANSPORT INFORMATION

Land transport **ADR/RID** : Substance name : Ethyleneimine stabilized
UN number : UN1185
ADR/RID Class : 6.1
Packing group : I
Labels : 6.1, 3
Hazard id number : 663

Maritime transport **IMDG** : Correct technical name : Ethyleneimine stabilized
UN/ID number : UN1185
IMDG Class : 6.1
Packing group : I
Subsidiary risk label : 3
Fem. : 6.1 – 01
Marine pollutant : N

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15 REGULATORY INFORMATION

Classification	:	N Pollutant	F Highly flammable	T+ Very Toxic
Risk Phrases	:	R45 R46 R11 R26/27/28 R34 R51/53	May cause cancer. May cause heritable genetic damage. Highly flammable. Very toxic by inhalation, in contact with the skin and if swallowed. Causes burn. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
Safety Phrases	:	S45 S53 S61	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible) Avoid exposure – obtain special instructions before use. Avoid release to the environment. Refer to special instructions/safety data sheets.	

16 OTHER INFORMATION

The information contained herein is applicable solely to the chemical substance when used in manufacturing and does not relate to other use of the substance described.

Its use is intended for persons having technical skill and their own discretion and risk.

The information has been developed from sources considered reliable, but has not been independently verified. Therefore, the manufacturer cannot guarantee the accuracy of the information from these sources nor should the statements contained herein be considered an official expression.

No representation or warranty, expressed or implied, including the warranties of merchantable and fitness for a particular use is made with respect to the information contained herein.

Indicate variations with regard to the previous version.

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