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Revision Number: 1

Product Name:

MEG (Monoethylene Glycol)



1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION

Identification of the substance or

preparation:

Country of origin:

CAS Number:

Synonyms:

Monoethylene Glycol

Iran (Islamic Republic of Iran)

107-21-1

M.E.G Monoethylene Glycol; 1, 2 Ethanediol; 1, 2 Dihydroxy ethane; Ethylene dehydrate. (C2H6O2)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous substances: Harmful Or Fatal If Swallowed.

May Cause Eye Irritation.

May Cause Respiratory Tract Irritation Mono ethylene glycol: 99.8 % MIN. This material is hazardous by OSHA hazard

communication definition.

See section 11

N/A

Toxicological characteristics: Substances present at a concentration

below the minimum danger:

Other component:

Hazardous label(s):

Diethylene glycol: 0.08 % MAX Water: 0.08 % MAX

3. IDENTIFICATION OF HAZARDS

Risk phrases: R-22 Harmful Or Fatal If Swallowed

This material is hazardous by OSHA hazard

communication definition.

Skin contact: May cause slight skin irritation.

Eye contact: May cause eye irritation. Corneal injury is unlikely. Inhalation: Vapors and mist at high temperature and poor

vapors and mist at high temperature and poor ventilation may accumulate and cause respiratory irritation and symptoms such as headache and

Material Safety Data Sheet (MSDS) According to the Directives 91/155/CEE-2001/58/CE-ISO 11014-1 Page: 2 of 8 Product Name: Revision Number: 1 **MEG** (Monoethylene Glycol) Reactivity Health

nausea. Repeated excessive exposure may cause

irritation of the upper respiratory tract.

Ingestion larger amounts may cause injury, even

death. May cause nausea, vomiting, abdominal discomfort, diarrhea, central nervous effects, cardiopulmonary effects and kidney failure.

Target organ effects: central nervous system, kidney,

liver and fetus.

4. FIRST AID MEASURES

If swallowed:

Other information:

As a general rule, in case of doubt or if symptoms persist, always call a doctor **NEVER** induce swallowing in an unconscious person.

Skin contact: Wash skin with soap and plenty of water. If

irritation occurred take medical attention. Move victim to fresh air. If not breathing give

artificial respiration, in case mouth to mouth

use rescuer protection.

Oxygen may be used by qualified personnel.

Get medical attention.

In case of splashes or contact with eyes: Flash eyes thoroughly with water for several

> minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing.

Get medical attention

Seek medical attention immediately. Do not Note of physician: induce vomiting. If person is fully conscious

give 1cup (240 ml) of water never give anything by mouth for unconscious person. If medical advice is delayed and if an adult has swallowed as 80 proof whiskey. In case of child give proportionally has liquor at a dose of 0.3 ounces (8 ml) liquor for each 10 pounds

of body weight or 2ml per kg body weight.

The main toxic effects when ingested are metabolic

acidosis and kidney damage. Ethanol is antidotal and may prevent of formation toxic material in the liver. Ethanol should be given intravenously, as 5% solution in sodium bicarbonate at amount of 10 ml/hr. A desired therapeutic level of ethanol in blood is 100mg/dl.Hemodialysis may be required. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning. The mechanism has not been elucidated but it appears to be noncardiogenic in origin in

ventilation and positive end expiratory pressure may be applied. Correction of acidosis is essential.

In case of exposure by inhalation:

In case of swallowing:

Note to physician:

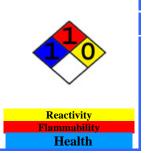
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5. FIRE FIGHTING MEASURES

Flammable class: Flash point :116 C Auto ignition temp:398 C

LEL: 3.2% V UEL:15.3% V

Suitable extinguishing media: Water fog, fine spray, dry chemical, carbon

dioxide, alcohol resistance foams, and

protean foam.

Do not use direct water stream. Use water spray to cool fire exposed containers and fire affected zone.

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:

Carbon monoxide, carbon dioxide, nitrogen oxides, varying composition which may be toxic and irritating.

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots and gloves). Isolate fire and deny unnecessary entry. If protective equipment is not available fight from a protected location and distance. Dilution of burning liquid with water may help distinguish of fire but does not use directly water. If it is possible move container from

fire area safely.

Keep people away. Container may rupture from gas generation in a fire situation.

6. ACCIDENTAL RELEASE MEASURES

Special protective equipment for fire

fighting:

Other information:

Personal precautions: Isolate area .Keep unnecessary personnel from

entering the area. Use suitable safety equipments.

Environmental precautions: Prevent to entire into soil, ditches, sewers,

waterways and /or ground waters.

Methods for cleaning up and disposal: Large spills: Contain spilled material in labeled

containers if possible. Dike area to contain spill. Small spills: Absorb with materials such as: cat

litter, sand and saw dust.

Other information: None

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7. HANDLING AND STORAGE

The regulations relating to storage premises apply to workshop where the product is handled:

Handling: Do not heat and agitate because of vapor and

mist. Avoid sparks, open flame and

incompatible materials during handling. Use adequate ventilation /personal protection. Avoid contact with eye/skin/s and do not ingest. Do not entire storage without adequate ventilation. Vessels must be

grounded. Do not eat, drink and smoke where this product is used.Do not swallow and contact eyes. Wash thoroughly after

handling.

Storage: Store under nitrogen blanket and at ambient

temperature.

equipment, Do not store near food stuffs and

potable water Sources.

Keep container closed and properly labeled. Store at cool, dry, ventilated area, flame,

spark, grounded

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values: Vapour and mist 127 mg/m3 50 ppm

ACGIH:100 mg/m3

Consult local authorities for recommended

exposure limits.

Exposure controls: Atmospheric levels should be maintained below

the exposure guideline. Provide local exhaust

ventilation.

Personal protective equipment: Use protective clothing chemically resistant to

this material. Selection of specific items such as face shield, boots, apron or full body suit will depend on the task. Use approved respiratory (NIOSH) protection if concentration exceeds TLV or unknown concentration and emergency

condition.

Clean all contaminated equipments before

using.

Eye protection: Use safety glasses or splash goggles. If eye is

discomfort, use a full-face respirator. Remove contact lenses when working with this chemical.

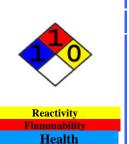
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Respiratory protection: Use an approved air-purifying respirator.

Organic vapor cartridge with a particulate

pre-filter.

Hand protection: Use gloves. Suitable materials are: butyl

rubber. NBR, Neoprene, natural rubber,

PVA,PVC

Skin and body protection: Use protective clothing chemically resistant to

this material.

Safety shower should be available.

Health measures: N/A
Environmental exposure controls: N/A

9. PHYSICAL AND CHEMICAL PROPERTIES

General information: Monoethylene Glycol

Appearance (at 20° C): liquid

 $\begin{array}{lll} \mbox{Colour:} & \mbox{Clear colourless} \\ \mbox{Odour:} & \mbox{Slight sweet} \\ \mbox{PH (at 20 °C):} & \mbox{Not applicable} \\ \mbox{Melting point/range (°C):} & -13 °C (9 °F) \end{array}$

Boiling point/range (°C): > 196°C (>387°F)
Flash point (°C): 116°C (241°F)
Flammability: Lower: 3.2 % (v)
Upper: 15.3 % (v)

Auto-ignition temperature: 400°C (752°F) Explosive properties: No data available

Oxidising properties:

Vapour pressure (at 20°C): 0.06 mmHg

Density (at 20°C): Liquid density :1.1151 - 1.1156 (water=1)

Vapour density: 2.1 (air=1)

Solubility (at 20°C): water solubility: 100%

solubility in fats: -

Viscosity (40°C) : N/A

Evaporation rate: 0.01 (butyl acetate=1)
Other information: MW= 63 g/mol

10. STABILITY AND REACTIVITY

Stability: Stable under normal condition of use.

Conditions to avoid: Heat, sparks, open flames and strong oxidizing

conditions.

Material to avoid: Strong acids, strong bases, strong oxidizers,

permanganate, peroxides, dichromate's, reactive sodium compound, sulfur compound, alkali metals,

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nitrates.

Hazardous decomposition products: Carbon monoxide, Carbon dioxide

As per amount of temperature and pressure may

release aldehydes, alcohols and ethers.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: - LD₅₀, oral, rat (mg.kg⁻¹): 25300 BWT

- LD₅₀, oral, mouse (mg.kg⁻¹):13300 BWT

- LD₅₀, dermal (mg.kg⁻¹) Rabbit:11900

Central nervous system, kidney effects ,blood **Sub chronic – chronic toxicity:**

(metabolic acidosis), respiratory system,

cardiovascular system

Sensibilization: No expected to be sensitizer.

Carcinogenicity: This product has not classified as a carcinogen

Not listed by OSHA, IARC and NTP

Reproductive effects: No reproductive effects expected for human

exposures.

Human experience: Mono ethylene glycol has low acute toxicity in

experimental animals following oral, inhalation and

dermal exposure.

Ingestion in humans have caused poisoning and

death.

Other information: Toxicity has three stages: stage1-(0.5-12

hours after ingestion) may include

inebriation, nausea and vomiting, metabolic

acidosis and CNS depression. Stage 2-(12-24 hours) tachycardia,

hypertension, severe metabolic acidosis with hyperventilation, hypoxia, congestive heart failure and adult respiratory distress

syndrome.

Stage 3-(24-72 hours) renal failure.

MEG ingestion also may cause local irritation

in digestion system, pain and bleeding.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Toxicity to micro organism: Bacterial 16 h EC 50

>1000 mg/l

Toxicity to acquit alive:

water flea ceriodaphina dubia;LC 50

10000-28500mg/l

fish:18000-46000 &2750 & 51000 mg/l

This product is expected to be non-hazardous to

aquatic species.

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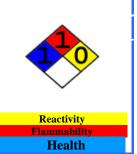
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Other adverse effects:

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Bio accumulative potential: Bio accumulation is expected not to happen.

Mobility:

Mobile in soil and water .Does not volatile from surface of the water and soil. Environmental half

life is 0.35 up to 24 days.

Persistence and degradability: Bio gradable under aerobic condition.

Bio gradation will occur after 28 days > 90% Hydroxyl radicals photo oxides this product.

13. DISPOSAL CONSIDERATIONS

Disposal of product: Disposal must be made according to official and

local regulations.

Do not dump into any sewers on the ground, or

into any body of water.

Can be disposed and taken up with sand, vermiculite, household garbage or similar inert

materials.

Disposal of packaging: Contaminated materials may be hazardous

waste.

Use only licensed transporters and permitted

facilities.

14. TRANSPORT INFORMATION

Land transport: environmentally
hazardous substance ,liquid,N.I.O.S

Hazard class: 9
UN NO: UN 3082
Packaging group: III

(Ethylene Glycol) Shipping label: Miscellaneous RQ Product

ADR/RID: Hazard class: 9

UN NO: UN 3082 Packaging group: III

Shipping label: Miscellaneous RQ Product

(For bulk shipment only)

Maritime transport: Hazard class: 9

UN NO: UN 3082 Packaging group: III

Shipping label: Miscellaneous RQ Product Drums ,pails or gallons containing less than RQ(5313 pounds)not subjected to regulation

Air transport: Hazard class: 9

UN NO: UN 3082 Packaging group: III

Shipping label: Miscellaneous RQ Product

(For bulk shipment only)

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15. REGULATORY INFORMATION

This product is a "hazardous material" as defined by the **Hazardous label(s):**

OSHA hazard communication standard.

Safety phrases:

Risk phrases:

R-22

16. OTHER INFORMATION



The contents and format of this MSDS are in accordance with EEC Commission Directive 2001/58/EC