Product Name:

MEG
(Monoethylene Glycol)

Reactivity
Flammability
Health

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

Identification of the substance or preparation:	**Monoethylene Glycol**
Country of origin:	**Iran (Islamic Republic of Iran)**
CAS Number:	**107-21-1**
Synonyms:	**M.E.G Monoethylene Glycol; 1, 2 Ethanediol; 1, 2 Dihydroxy ethane; Ethylene dehydrate. (C2H6O2)**
Company/undertaking identification	**National Petrochemical Company** **Iran Petrochemical Commercial Company (IPCC)**
Manufacturer subcontractor:	**None**
Emergency phone number:	**00982188881735**
Contact email:	**msds@petrochem-ir.net**
Fax:	**00982188839511**
Association/Organization:	**None**
Use of the substance/Preparation:	**Polyester, resins, wetting and plasticizing agents, coolant additives, formulation of printing ink**

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.**
Hazardous label(s):	**This material is hazardous by OSHA hazard communication definition.**
Toxicological characteristics:	**See section 11**
Substances present at a concentration below the minimum danger:	**N/A**
Other component:	**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 ventilation may accumulate and cause respiratory irritation and symptoms such as headache and**

	nausea. Repeated excessive exposure may cause irritation of the upper respiratory tract.
If swallowed:	**Ingestion larger amounts may cause injury, even death. May cause nausea, vomiting, abdominal discomfort, diarrhea, central nervous effects, cardiopulmonary effects and kidney failure.**
Other information:	**Target organ effects: central nervous system, kidney, liver and fetus.**

4. FIRST AID MEASURES

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.**
In case of exposure by inhalation:	**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**
In case of swallowing:	**Seek medical attention immediately. Do not 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.**
Note of physician:	
Note to physician :	**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.**

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.**
Special protective equipment for fire fighting :	**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.**
Other information:	**Keep people away. Container may rupture from gas generation in a fire situation.**

6. ACCIDENTAL RELEASE MEASURES

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**

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.**

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**
Colour:	**Clear colourless**
Odour:	**Slight sweet**
PH (at 20°C):	**Not applicable**
Melting point/range (°C):	**-13°C (9°F)**
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,**

	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:	**- LD_{50}, oral, rat ($mg.kg^{-1}$): 25300 BWT** **- LD_{50}, oral, mouse ($mg.kg^{-1}$):13300 BWT** **- LD_{50}, dermal ($mg.kg^{-1}$) Rabbit:11900**
Sub chronic – chronic toxicity:	**Central nervous system, kidney effects ,blood (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.**

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%**
Other adverse effects:	**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 (Ethylene Glycol)	**Hazard class: 9 UN NO: UN 3082 Packaging group: III 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)**

15. REGULATORY INFORMATION

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

Disclaimer of liability:

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