



Kimya Resin Arak

Chemical Industrial Co.

## Material Safety Data Sheet

### Mono ethylene glycol

Tel: (+98) 086-3422-4515

(Company)

Tel: (+98) 086-3823-2049

(Factory)

### 1. Identification

<b>Trade name</b>	Mono ethylene glycol
<b>Synonyms</b>	1,2-Dihydroxyethane / Ethane-1,2-diol / 1,2-Ethandiol / Ethane diol / glycol/Mono ethylene glycol
<b>Use</b>	Industrial use raw material for synthesis processes in the chemical industry Solvent
<b>Company</b>	Kimya Resin Arak Company
<b>Address</b>	Unit 19, 7th Floor, Edge Of Daneshsara Alley, Shariati Sq., Arak, Iran.
<b>Telephone</b>	+98 86 34224514-15 & +98 86 34224864
<b>E-mail</b>	<a href="mailto:info@kimyaresin-arak.com">info@kimyaresin-arak.com</a>
<b>Factory Address</b>	Shazand Industrial Zone (Shahid Babaei ), Shazand, Iran.
<b>Tel</b>	+98 86 38232049 & +98 86 38232162
<b>Email</b>	<a href="mailto:sales@kimyaresin-arak.com">sales@kimyaresin-arak.com</a>

### 2. Hazard Identification

#### Classification of the substance or mixture

Acute toxicity, Category 4 (Oral)

Harmful if swallowed.

Specific target organ toxicity – repeated  
Exposure Category 2

May cause damage to organs through prolonged or  
repeated exposure.

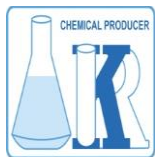
#### Label elements

#### Hazard pictograms



#### Signal word

Warning



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#### Hazard statements

- H302** Harmful if swallowed.  
**H373** May cause damage to organs through prolonged or repeated exposure.

#### Precautionary statements

- P260** Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
**P264** Wash skin thoroughly after handling.  
**P270** Do not eat, drink or smoke when using this product.  
**P301 + P312** IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell  
**P314** Get medical advice/ attention if you feel unwell.  
**P501** Dispose of contents/ container to an approved waste disposal plant.

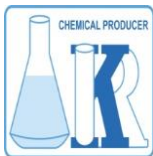
### 3. Composition/information on ingredients

Chemical entity	CAS No	Proportion
Ethylene glycol	107-21-1	>99 % (w/w)
Ingredients determined to be Non-Hazardous	-	<u>Balance</u> 100

### 4. First aid measures

#### Description of first aid measures

- General advice** Take off all contaminated clothing immediately. If you feel unwell, seek medical advice (show the label where possible).
- If inhaled** Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Monitor breathing, give oxygen if necessary. Consult a physician.
- In case of skin contact**
- In case of eye contact** Flush eyes with water as a precaution. If eye irritation persists, consult a specialist



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#### **If swallowed**

Call a physician immediately. Clean mouth with water and drink afterwards plenty of water.

#### **Most important symptoms and effects, both acute and delayed**

**Symptoms:** No information available.

**Risks:** No information available.

#### **Indication of any immediate medical attention and special treatment needed**

**Treatment:** No information available.

## 5. Firefighting measures

#### **Suitable extinguishing media**

Water spray, Dry powder, Foam, Carbon dioxide (CO<sub>2</sub>)

#### **Specific hazards during firefighting**

Dangerous gases or fumes may occur in case of fire.

#### **Special protective equipment for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

#### **Further information**

Standard procedure for chemical fires.

## 6. Accidental release measures

#### **Personal precautions**

Use personal protective equipment.

#### **Environmental precautions**

Avoid subsoil penetration.

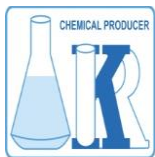
Do not flush into surface water or sanitary sewer system.

#### **Methods for cleaning up**

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust)

#### **Reference to other sections**

For personal protection see section 8.



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## 7. Handling and storage

<b>Advice on safe handling</b>	Wear personal protective equipment. Avoid contact with skin and eyes.
<b>Advice on protection against fire and explosion</b>	No special protective measures against fire required
<b>Requirements for storage areas and containers</b>	Keep tightly closed. Keep in a dry place.
<b>Storage class (TRGS 510)</b>	10-13: German Storage Class 10 to 13
<b>Other data</b>	Protect from frost, heat and sunlight.
<b>Container material</b>	unsuitable materials: Zinc

## 8. Exposure controls/personal protection

<b>Control parameters</b>	Long-term exposure limit (8-hour TWA): WEL 52 mg/m <sup>3</sup> (Sk)
<b>Occupational exposure limits</b>	Short-term exposure limit (15-minute): WEL 104 mg/m <sup>3</sup> (Sk) WEL = Workplace Exposure Limit
<b>DNEL</b>	Workers: Inhalation; Long term local effects: 35 mg/m <sup>3</sup> Workers: Dermal; Long term systemic effects: 106 mg/kg/day General population: Inhalation; Long term local effects: 7 mg/m <sup>3</sup> General population: Dermal; Long term systemic effects: 53 mg/kg/day
<b>PNEC</b>	Fresh water; 10 mg/l Marine water; 1 mg/l Intermittent release; 10 mg/l STP; 199.5 mg/l Sediment (Freshwater); 37 mg/kg Sediment (Marine water); 3.7 mg/kg Soil; 1.53 mg



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### **Exposure controls**

#### **Appropriate engineering controls**

Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimize worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimize exposure.

### **Protective equipment**



#### **Eye/face protection**

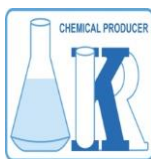
Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.

#### **Hand protection**

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. To protect hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended. Wear protective gloves made of the following material: Nitrile rubber. Thickness: > 0.1 mm The selected gloves should have a breakthrough time of at least 8 hours. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.

#### **Other skin and body protection**

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.



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#### Hygiene measures

Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.

#### Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

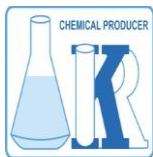
#### Environmental exposure controls

Keep container tightly sealed when not in use. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Store in a demarcated bunded area to prevent release to drains and/or watercourses

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

<b>Physical state</b>	liquid; 20 °C; 1.013 hPa	<b>Form</b>	liquid
<b>Color</b>	clear	<b>Odor</b>	very faint
<b>Odor Threshold</b>	25 ppm.	<b>pH</b>	20 °C; neutral
<b>Melting point</b>	ca. -13 °C	<b>Boiling point/</b>	ca. 197 °C; 1.013 hPa
<b>Flash point</b>	111 °C; DIN 51758	<b>Evaporation rate</b>	No data available
<b>Flammability</b>	not applicable (liquid)	<b>Lower explosion limit</b>	3.2 %(V)
<b>(solid, gas)</b>		<b>Upper explosion limit</b>	53 %(V)
<b>Vapor pressure</b>	ca. 0,1 hPa; 20 °C	<b>Relative vapor density</b>	> 1
<b>Density</b>	1.113 g/cm <sup>3</sup> ; 20 °C		
<b>Water solubility</b>	20 °C; completely miscible		



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<b>Partition coefficient:</b> n-octanol/water	log Pow: -1,36	<b>Ignition temperature</b>	410 °C; DIN 51794
<b>Auto-ignition temperature</b>	Not auto-flammable	<b>Viscosity</b>	1.61 × 10 <sup>-2</sup> Pa.s
<b>Oxidizing properties</b>	No data available		

## 10. Stability and reactivity

### Reactivity

The following materials may react with the product: Oxidising agents. Acids. Alkalis.

### Stability

Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions. The substance is hygroscopic and will absorb water by contact with the moisture in the air.

### Possibility of hazardous reactions

May generate heat.

### Conditions to avoid

Avoid heat. Freezing. Keep at temperature not exceeding 40°C.

### Materials to avoid

Oxidizing agents. Acids. Alkalis. Aluminum.

### Hazardous decomposition products

Does not decompose when used and stored as recommended.

## 11. Toxicological information

### Acute toxicity

#### Acute oral toxicity

LD50 Rat: > 2.000 mg/kg (literature value)

#### Acute inhalation toxicity

LC50 Rat: > 1 - 5 mg/l; 6 h (literature value)  
Based on available data, the classification criteria are not met.



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<b>Acute dermal toxicity</b>	LD50 Mouse: > 2.000 mg/kg; (literature value) Based on available data, the classification criteria are not met.
<b>Human experience - Ingestion</b>	Harmful if swallowed. (literature value)
<b>Skin irritation</b>	Rabbit: not irritating (literature value) Based on available data, the classification criteria are not met.
<b>Eye irritation</b>	Rabbit: not irritating (literature value) Based on available data, the classification criteria are not met.
<b>Sensitization</b>	Maximization Test Guinea pig: not sensitizing (literature value) Based on available data, the classification criteria are not met.
<b>Genotoxicity in vitro</b>	In vitro tests did not show mutagenic effects (literature value)
<b>Genotoxicity in vivo Remarks</b>	In vivo tests did not show mutagenic effects (literature value) Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	Mouse; oral feed; 2 years; NOAEL: 1.500 mg/kg bw/day In this study no cancerogenic effects were observed. (literature value)
<b>Remarks</b>	Based on available data, the classification criteria are not met.
<b>Reproductive toxicity</b>	Rat; Oral NOAEL ((parents)): 1.000 mg/kg (based on body weight and day) NOAEL (F1): 1.000 mg/kg (based on body weight and day) NOAEL (F2): 1.000 mg/kg (based on body weight and day) (literature value)
<b>Remarks reproductive toxicity</b>	Based on available data, the classification criteria are not met.





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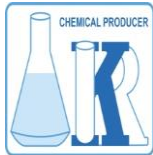
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<b>Teratogenicity</b>	Rabbit; Oral NOAEL: 2.000 mg/kg (based on body weight and day) NOAEL (pregnant female): 1.000 mg/kg (based on body weight and day) (literature value)
<b>Remarks-Teratogenicity</b>	Based on available data, the classification criteria are not met.
<b>STOT - single exposure Remarks</b>	The substance or mixture is not classified as specific target organ toxicant, single exposure
<b>STOT - repeated exposure Remarks</b>	Ingestion; Target Organs: Kidney. May cause damage to organs through prolonged or repeated exposure. (literature value)
<b>Repeated dose toxicity</b>	NOAEL: 150 mg/kg (based on body weight and day); OECD Test Guideline 408 Rat; Oral; Subchronic toxicity Target Organs: Kidney (literature value)  Dog; Dermal; Subacute toxicity NOAEL: 2.220 mg/kg (based on body weight and day); OECD Test Guideline 410 Target Organs: Kidney (literature value)
<b>Aspiration toxicity</b>	(literature value)

## 12. Ecological information

<b>Toxicity to fish</b>	LC50 (96 h) Pimephales promelas (fathead minnow): > 100 mg/l ; static test (literature value)
<b>Toxicity to fish/ Chronic toxicity</b>	NOEC (7 d) Pimephales promelas (fathead minnow): > 100 mg/l (literature value)
<b>Toxicity to daphnia and other aquatic invertebrates- Chronic toxicity</b>	EC50 (48 h) Daphnia magna (Water flea): > 100 mg/l ; static test; OECD Test
<b>Toxicity to daphnia and other aquatic invertebrates – Chronic toxicity</b>	NOEC (7 d) Ceriodaphnia sp.: > 100 mg/l; reproduction rate; Fresh water (literature value)



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#### **Toxicity to aquatic plants**

EC50 (96 h) Pseudokirchneriella subcapitata (microalgae): > 100 mg/l ; static test; (literature value)

#### **Toxicity to bacteria**

EC20 (30 min) activated sludge, domestic: > 1.995 mg/l;  
Respiration inhibition; ISO 8192  
Category approach  
(literature value)

#### **Toxicity to soil dwelling organisms**

The study is not necessary.  
Justification:  
Readily biodegradable.  
Direct exposure to soil is unlikely.

#### **Toxicity to terrestrial flora**

The study is not necessary.  
Justification:  
Readily biodegradable.  
Direct exposure to soil is unlikely

#### **Toxicity for other terrestrial non-mammalian fauna**

The study is not necessary.  
Justification:  
Readily biodegradable.  
Direct exposure to soil is unlikely.  
Accumulation in terrestrial organisms is unlikely.

#### **Persistence and degradability Biodegradability Bioaccumulation**

> 70 %; 28 d; aerobic; OECD Test Guideline 301A  
(literature value)

Bioaccumulation is unlikely.

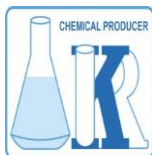
#### **Mobility in soil**

Adsorption/Soil; Medium: Soil; Koc: 1; calculated  
Highly mobile in soils  
(literature value)

### 13. Disposal consideration

#### **Waste treatment methods Product**

Can be incinerated, when in compliance with local regulations.



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**waste code of the European Union: EWC**

A waste code in accordance with the European Waste Catalogue (EWC) may not be assigned to this product since it admits of a classification only when the consumer uses it for some purpose. The waste code must be determined in agreement with the regional waste disposal authority or company.

## 14. Transport information

DOT

**UN Number:** 3082

**Description of the goods:** Environmentally Hazardous Substance, Liquid, N.O.S. (Ethylene Glycol)

**Class:** 9

**Packing group:** III

## 15. Regulatory information

### Occupational restrictions

Employment restrictions for children and young workers in accordance with directive 94/33/EC and the respective national provisions are to be observed.

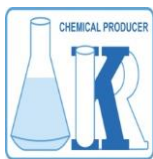
### National/other regulation

**Legislation on the control of major-accident hazards involving dangerous substances**

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. list entry in the directive:: Not applicable

### Directive 1999/13/EC (VOC)

The question whether this product or components thereof has/have to be considered as volatile organic compound/compounds (VOC) as defined by Directive 1999/13/EU can only be answered when detailed knowledge on the use as solvent in connection with certain activities in certain facilities is available.



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#### Notification status

Switzerland. Consolidated Inventory (based on EU-EINECS and EU-NLP)	CH INV	listed (product or constituents are listed)
Canadian Domestic Substances List (DSL)	DSL	listed (product or constituents are listed)
Australia Inventory of Chemical Substances (AICS)	AICS	listed (product or constituents are listed)
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	listed (product or constituents are listed)
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	listed (product or constituents are listed)
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	listed (product or constituents are listed)
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	listed (product or constituents are listed)
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC	listed (product or constituents are listed)
Taiwan Chemical Substance Inventory (TCSI)	TCSI	listed (product or constituents are listed)
United States TSCA Inventory	TSCA	listed (product or constituents are listed)

## 16. Other information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

#### Abbreviations and acronyms:

**DOT:** US Department of Transportation/ **EWC** European Waste Catalogue/ **EC**... Effect concentration/ **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals/ **LC**... Lethal Concentration, ...%/ **LD**... Lethal Dose, ...%/ **NOAEL** no observable adverse effect level/ **NOEL/NOEC** No Observed-effect level/concentration/ **OECD** Organization for Economic Co-operation and Development/ **UN:** Union nations/ **VOC:** Volatile organic compound