

**Kimya Resin Arak**  
Chemical Industrial Co.

## Material Safety Data Sheet

## Unsaturated polyester resin

Tel: (+98) 086-3422-4515  
(Company)  
Tel: (+98) 086-3823-2049  
(Factory)

### 1. Identification

<b>Product name</b>	Unsaturated polyester resin in styrene
<b>Synonyms</b>	None
<b>Use</b>	In manufacture of filled or reinforced polyester composites. Boat hulls, lorry cabs, roofing plans, chemical plants and several seaplane floats and similar moldings
<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>

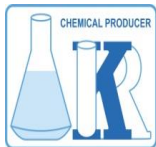
### 2. Hazard Identification

#### Classification of the substance or mixture

<b>Physical hazards</b>	Flam. Liq. 3 - H226
<b>Health hazards</b>	Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Repr. 2 - H361d STOT RE 1 - H372
<b>Environmental hazards</b>	<b>H401</b> Toxic to aquatic life.
<b>Human health</b>	See Section 11 for additional information on health hazards.

#### Pictogram





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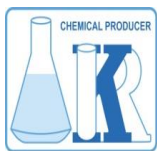
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<b>Signal word</b>	Danger
<b>Hazard statements</b>	<b>H226</b> Flammable liquid and vapour. <b>H315</b> Causes skin irritation. <b>H319</b> Causes serious eye irritation. <b>H332</b> Harmful if inhaled. <b>H361d</b> Suspected of damaging the unborn child. <b>H372</b> Causes damage to organs through prolonged or repeated exposure.
<b>Precautionary statements</b>	<b>P101</b> If medical advice is needed, have product container or label at hand. <b>P102</b> Keep out of reach of children. <b>P201</b> Obtain special instructions before use. <b>P202</b> Do not handle until all safety precautions have been read and understood. <b>P210</b> Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. <b>P233</b> Keep container tightly closed. <b>P240</b> Ground/ bond container and receiving equipment. <b>P241</b> Use explosion-proof electrical equipment. <b>P242</b> Use only non-sparking tools. <b>P243</b> Take precautionary measures against static discharge. <b>P260</b> Do not breathe vapor/ spray. <b>P264</b> Wash contaminated skin thoroughly after handling. <b>P270</b> Do not eat, drink or smoke when using this product. <b>P271</b> Use only outdoors or in a well-ventilated area. <b>P280</b> Wear protective gloves/ protective clothing/ eye protection/ face protection. <b>P302+P352</b> IF ON SKIN: Wash with plenty of water. <b>P303+P361+P353</b> IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. <b>P304+P340</b> IF INHALED: Remove person to fresh air and keep comfortable for breathing. <b>P305+P351+P338</b> IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. <b>P308+P313</b> IF exposed or concerned: Get medical advice/ attention. <b>P312</b> Call a POISON CENTER/ doctor if you feel unwell. <b>P314</b> Get medical advice/ attention if you feel unwell. <b>P332+P313</b> If skin irritation occurs: Get medical advice/



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<b>P337+P313</b>	If eye irritation persists: Get medical advice/ attention.
<b>P362+P364</b>	Take off contaminated clothing and wash it before reuse.
<b>P370+P378</b>	In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish
<b>P403+P235</b>	Store in a well-ventilated place. Keep cool.
<b>P405</b>	Store locked up.
<b>P501</b>	Dispose of contents/ container in accordance with national regulations.
<b>Contains</b>	STYRENE
<b>Supplementary precautionary statements</b>	<b>P261</b> Avoid breathing vapor/ spray. <b>P321</b> Specific treatment (see medical advice on this label).

### 3. Composition/information on ingredients

Component	CAS no.	Proportion
Unsaturated Polyester Resin	-	55% - 60%
Styrene	100-42-5	40% - 45%

### 4. First aid measures

#### Description of first aid measures General information

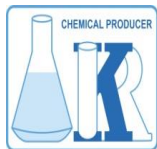
Remove affected person from source of contamination. Get medical attention immediately.

#### Inhalation

Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention. Symptoms of lung oedema (shortness of breath) may develop up to 24 hours after exposure. Show this Safety Data Sheet to the medical personnel. Place unconscious person on the side in the recovery position and ensure breathing can take place.

#### Ingestion

Rinse mouth thoroughly with water. Give plenty of water to drink. Give milk instead of water if readily available. Keep affected person under observation. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.



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#### **Skin contact**

Remove contaminated clothing immediately and wash skin with soap and water. Consult a physician for specific advice. Rinse immediately with plenty of water. While rinsing, remove

#### **Eye contact**

Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately

### 5. Firefighting measures

#### **General Information**

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Containers may explode in the heat of a fire. Flammable liquid and vapor. May form explosive peroxides. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May be ignited by heat, sparks, and flame.

#### **Extinguishing media**

##### **Suitable extinguishing media**

Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam:

##### **Unsuitable extinguishing media**

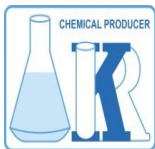
Do not use water jet.

#### **Specific hazards arising from the chemical**

Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard

#### **Special protective actions for fire-fighters**

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.



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### **Hazardous thermal decomposition products**

Decomposition products may include the following materials:  
carbon dioxide carbon monoxide halogenated compounds

### **Special protective equipment for fire-fighters**

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 6. Accidental release measures

### **Personal precautions, protective equipment and emergency procedures**

#### **For non-emergency personnel**

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

#### **For emergency responders**

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

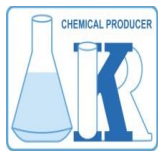
#### **Environmental precautions**

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### **Methods and materials**

#### **for containment and cleaning up**

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.



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#### Large spill

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

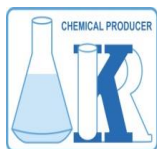
## 7. Handling and storage

#### Handling Information

Avoid inhalation and contact with eyes, skin, and clothing. Wash hands thoroughly after handling and before eating or drinking. Remove and wash contaminated clothing before reuse. Use with adequate ventilation. Ground and bond containers when transferring the material to prevent static electricity sparks which could ignite the vapor. Use spark-proof tools and explosion-proof equipment. Consult your supplier of promoters and catalysts for additional instructions on proper mixing and usage. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioned or properly disposed.

#### Storage Information

Keep away from ignition sources: flames, pilot lights, electrical sparks, and sparking tools. NO SMOKING. Do not store in direct sunlight. Store separate from oxidizing materials, peroxides, and metal salts. Keep container closed when not in use. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 75°F (25°C). Copper or copper containing alloys should be avoided as containers



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### 8. Exposure controls/personal protection

#### Exposure Guidelines

The American Conference of Governmental Industrial Hygienists (ACGIH) have established, for styrene, Threshold Limit Values (TLV) of 20 ppm or 85 mg/m<sup>3</sup> TWA and 40 ppm or 170 mg/m<sup>3</sup> Short Term Exposure Limit (STEL), 15 minute exposure, with a skin notation which indicates absorption through the skin which could add to the employees exposure.

#### Engineering Controls

Local ventilation may be required during certain operations to maintain concentrations below recommended exposure limits. Use explosion-proof ventilation equipment.

#### Eye Protection

Wear safety glasses with side shields. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

#### Protective equipment

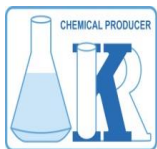


#### Skin Protection

Wear chemical resistant gloves such as polyvinyl alcohol or Viton®. If splashing is likely, wear impervious clothing and boots to prevent repeated or prolonged skin contact. Consult your supplier of personal protective equipment for additional instructions on proper usage.

#### Respiratory Protection

A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be necessary under certain circumstances where airborne concentrations are expected to exceed exposure limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.



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### 9. Physical and chemical properties

**Color:** Pale Yellow, clear.

**Odor:** Pungent

**Odor Threshold:** 0.2 ppm Styrene

**Physical State:** Viscose Liquid

**Solubility in Water:** Insoluble at 20°C (68 °F)

**Vapor Pressure:** 6.12 (mm Hg) Styrene

**Specific Gravity:** 1.1 - 1.43 (Water = 1) at 25°C

**Boiling Point:** 295° F (146 °C) Styrene

**Melting Point:** Not applicable

**Freezing Point:** -22.7°F (-30.4 °C) Styrene

**Vapor Density:** 3.6 (AIR=1) Styrene

**Volatile Percent:** 40-45 % by weigh

**Flash Point:** 31 °C

**Flammable Limits:** CLEL 1.1%, UEL 6.1%.

### 10. Stability and reactivity

**Stability**

The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.

**Conditions to avoid**

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

**Materials to avoid**

Reactive or incompatible with the following materials: oxidizing materials

**Hazardous decomposition products**

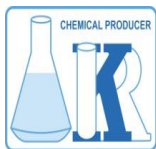
Under normal conditions of storage and use, hazardous decomposition products should not be produced

### 11. Toxicological information

**Acute Eye Toxicity**

Studies indicate that exposures to concentrations of styrene above 200 ppm cause irritation of the eyes. Styrene causes transient moderate eye irritation without corneal involvement.





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### **Acute Skin Toxicity**

Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) to styrene is 6.6. Styrene: dermal LD50 (rabbit), 5 g/kg. Styrene causes severe irritation at 72 hours.

### **Acute Inhalation**

Toxicity: Styrene: inhalation LC50 (rat), 24 g/m<sup>3</sup> / 4 hrs. Studies indicate that exposures to concentrations of styrene above 200 ppm cause irritation of the upper respiratory tract.

### **Acute exposure**

to high concentrations of styrene may produce irritation of the mucous membranes of the upper respiratory tract, nose, and mouth, followed by symptoms of narcosis, muscular contraction, and death due to respiratory center paralysis.

### **Acute Oral Toxicity**

Styrene: oral LD50 (rat), 5 g / kg.

### **Sub chronic**

Styrene: inhalation NOEL(rat) 200 ppm 6 hr / day 13 weeks, target organ effects: auditory response; inhalation LOEL (rat) 800 ppm 6 hr / day 3 - 13 weeks, target organ effects: auditory response.

### **Chronic/Carcinogenicity**

The International Agency for Research on Cancer (IARC) has classified in Group 2B, possibly carcinogenic to humans.

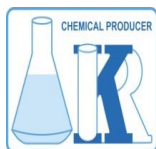
## 12. Ecological information

### **Ecotoxicity**

Styrene is toxic to aquatic organisms and should not be released to sewage, drainage systems and all bodies of water at concentrations exceeding approved limits under applicable regulations and permits. Styrene: LC50 (Sheep shead minnow), 9.1 mg / l / 96 hr.

### **Environmental Fate**

Styrene released to soil is subject to biodegradation.



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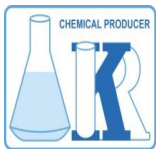
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### 13. Disposal consideration

<b>Waste Disposal Method</b>	RCRA HAZARDOUS WASTE: This material and containers that is not empty, if discarded, would be regulated as a hazardous waste under RCRA. Treatment and/or disposal must be completed at a RCRA-permitted Treatment, Storage and Disposal Facility (TSD). The storage and transportation of RCRA hazardous wastes are also regulated by the USEPA.
<b>Empty drums</b>	"Empty containers", as defined fewer than 40 CFR 261.7 of OSHA, USA or other transportation regulations, are not classified as hazardous wastes.
<b>RCRA Hazard Class</b>	D001 (IGNITABLE): When discarded in its purchased form, this material would be regulated under 40 CFR 261.21 as EPA Hazardous Waste Number D001 based on the characteristic of ignitability.

### 14. Transport information

<b>UN Number</b>	1866
<b>Proper Shipping Name</b>	Resin Solution, Flammable
<b>Hazchem Code</b>	3Y
<b>Dangerous Goods Class</b>	Class 3
<b>Packing Group</b>	III
<b>Tunnel Restriction</b>	D
<b>EMS Number</b>	F-E, S-E
<b>MDG - marine pollutant</b>	Yes
<b>IMDG - EMS No.</b>	3-05
<b>IMDG - MFAG table No.</b>	310
<b>IATA - shipping name</b>	Resin solution
<b>IATA - class</b>	Class 3
<b>IATA - subsidiary risk(s)</b>	None
<b>ADNR – class</b>	Not available
<b>Transport labels</b>	



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### 15. Regulatory information

#### US regulations

**HCS Classification** Flammable liquid, Irritating material, Sensitizing material, Target organ effects

**U.S. Federal regulations** **SARA 311/312 Classification** Immediate (acute) health hazard, Delayed (chronic) health hazard, Fire hazard

**SARA**

#### **313 - Supplier Notification**

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372. Styrene - 100-42-5 (21.95%)

**SARA 302 Extremely Hazardous Substances** None required.

#### **State regulations**

**Massachusetts RTK Substances** The following components, are listed: Styrene

**New Jersey RTK Hazardous Substances** The following components are listed: Styrene

**Pennsylvania RTK Hazardous Substances** The following components are listed: Styrene.

**California Prop. 65** None required.

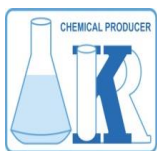
#### Canada

**WHMIS (Canada)** Class B-2: Flammable liquid  
Class D-2A: Material causing other toxic effects (Very toxic).  
Class D-2B: Material causing other toxic effects (Toxic).

**Canadian lists** **Canadian NPRI** The following components are listed: Styrene,

#### International regulations

**Chemical inventories** Europe inventory Not determined.  
Philippines inventory (PICCS) Not determined.  
New Zealand Inventory (NZIoC) Not determined.



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Europe inventory Not determined.  
Philippines inventory (PICCS) Not determined.  
New Zealand Inventory (NZIoC) Not determined.  
Korea inventory (KECI) All components are listed or exempted.  
Japan inventory (ISHL) Not determined.  
Japan inventory (ENCS) Not determined.  
China inventory (IECSC) All components are listed or exempted.  
Australia inventory (AICS) Not determined.  
United States inventory (TSCA 8b) All components are listed or exempted.  
Canada inventory At least one component is not listed in DSL but all such components are listed in NDSL

### 16. Other information

Hazardous Material  
Information System III  
(U.S.A.)

Health : 2  
Flammability: 3  
Physical hazards : 1

Chronic : \*Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

**Prepared by** Product Safety & Regulatory Compliance Group  
**Date of issue** 13-JUN-2011  
**Date of printing** 23-JUN-2011  
**Version** 1.5

#### Abbreviations and acronyms:

**DOT:** US Department of Transportation./ **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals./ **IATA:** International Air Transport Association./ **IMDG:** International Maritime Code for Dangerous Goods./ **MARPOL:** The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes./ **NIOSH:** National Institute for Occupational Safety and Health./ **NOEC:** No Observed Effect Concentration./ **OECD:** Organization for Economic Co-operation and Development./ **OSHA:** Occupational Safety and Health Administration./ **SARA:** Superfund Amendments and Reauthorization Act (USA)./ **STOT:** specific target organ toxicity.