

1-IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: *FARAPOL VINYLESTER RESIN*

Farapol Registered Trademark of Farapol Chemical Industrial Company.

Other Product Name: Vinylester resin solution in styrene monomer.

Recommended use: This resin is specially formulated to resist water, oil and oil related products and suited for production of pipes, tanks, etc.

Manufacturer/Supplier:

Factory Address:

Farapol Jam Chemical Industrial Company

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2-HAZARDS IDENTIFICATION

Health Hazard classification:

This material is classified as hazardous according to the health criteria of NOHSC Australia.

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Hazard category

Xn, Xi Harmful, Irritant

Risk phrase(s)

R10 Flammable

R20 Harmful by inhalation

R36/38 Irritating to eyes and skin.

Safety phrase(s)

S23 Do not breathe vapor or spray.

Note: European Commission Risk (R) & Safety (S) phrases relating to physico-chemical properties are provided for information only.

Dangerous Goods classification:

Classified as Dangerous Goods by the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Class 3 Flammable Liquid

3- COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL ENTITY	CAS NO.	PROPORTION (% weight/weight)
Vinylester resin	N/A	60-65
Styrene monomer	100-42-5	35-40
Vinylester Resin	HS Code	39079100
	UN No.	1866

4- FIRST AID MEASURES

Ingestion: If swallowed, do NOT induce vomiting. If patient is conscious, give a glass of water. Seek immediate medical assistance. Transport to a doctor or hospital.

Eye contact: If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to a doctor or hospital.

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Skin contact: If skin or hair contact occurs, remove contaminated clothing. Wipe resin off skin and hair. Wash skin and hair thoroughly with soap and water. Wash clothing before reuse.

Inhalation: If inhaled, remove to fresh air. Seek medical assistance. If not breathing give artificial respiration. If breathing difficult give oxygen.

First aid facilities: Provide eye baths and safety showers close to areas where eye or skin contact may occur.

Medical attention and Special Treatment: Treat symptomatically.

5- FIRE-FIGHTING MEASURES

Flash Point:	89° F (32 ° C)
Flash Point Method Used:	Seta Flash Closed Cup
Flammable Limits in Air (Lower):	1.1 % in air Styrene
Flammable Limits in Air (Upper):	7 % in air Styrene
Autoignition:	914° F (490 ° C) Styrene

General Hazards: FLAMMABLE LIQUID: This material's flash point is less than 100°F (38°C).

Fire Fighting Extinguishing Media: Use carbon dioxide, foam, dry chemical or water fog to extinguish fire.

Fire Fighting Equipment: Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use.

Fire Fighting Instructions: Evacuate all persons from the fire area to an explosion-protected location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. Containers of this material may build up pressure if exposed to heat (fire). Use water spray to cool fire-exposed containers. DO NOT extinguish a fire resulting from the flow of this flammable liquid until the flow of liquid is effectively shut off. This precaution will help prevent the accumulation of an explosive vapor-air mixture after the initial fire is extinguished. Use water spray to disperse vapors if a spill or leak has not ignited.

Fire and Explosion Hazards: FLAMMABLE LIQUID. Vapors can form an explosive mixture with air. Vapor can travel to a source of ignition (spark or flame) and flash back. This material may polymerize (react) when its container is exposed to heat (as during a fire). This polymerization increases pressure inside a closed container and may result in the violent rupture of the container.

Hazards from combustion products: Combustion products may include carbon monoxide and carbon dioxide, styrene and acrid smoke.

6- ACCIDENTAL RELEASE MEASURES

Accidental Release Measures:

FOR SMALL SPILLS: Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Use non-sparking (non-metallic) tools to clean up spill. Remove all sources of ignition. NO SMOKING.

FOR LARGE SPILLS: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). NO SMOKING. Person's not wearing protective equipment (see Section 8) should be excluded from the area of the spill until clean-up has been completed. Stop spill at source. Prevent spilled material from contaminating soil or entering drains, sewers, streams or other bodies of water. Prevent spilled material from spreading. Immediately notify authorities of any reportable spill as may be required pursuant to regulations. See Section 15 for applicable CERCLA reportable quantities. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other waste materials to waste containers for disposal.

7- HANDLING AND STORAGE

Signal Word: W A R N I N G

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.

8- EXPOSURE CONTROLS / PERSONAL PROTECTION

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Exposure Guidelines: The Occupational Safety and Health Administration (OSHA-USA), has established for styrene, a Permissible Exposure Limit (PEL) of 100 ppm for an 8 hour Time Weighted Average (TWA); 200 ppm for an acceptable ceiling concentration; and a 600 ppm concentration within a duration of 5 minutes in any 3 hours as an acceptable maximum peak above the acceptable ceiling concentration for an 8 hour shift. While the USA federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hour TWA and a Short Term Exposure Limit (STEL) of 100 ppm, 15 minute exposure.

The American Conference of Governmental Industrial Hygienists (ACGIH) have established, for styrene, Threshold Limit Values (TLV) of 20 ppm or 85 mg/m³ TWA and 40 ppm or 170 mg/m³ 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 1) safety glasses with side shields and a face shield or 2) goggles and a face shield. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

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. Protection provided by air purifying respirators is limited. Use a positive pressure air-supplied respirator if 1) there is any potential for an uncontrolled release, 2) exposure levels are not known, or 3) during other circumstances where air purifying respirators may not provide adequate protection.

9- PHYSICAL AND CHEMICAL PROPERTIES

Color: Pale Yellow, Clear

Odor: Pungent

Odor Threshold: 0.2 ppm Styrene

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Physical State: Liquid

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

Vapor Pressure: 6.12 (mm Hg) Styrene

Specific Gravity: 1.1 - 1.2 (Water = 1) at 25°C (77 °F)

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: 35-40 % by weight

10- STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and storage conditions.

Incompatibility: Avoid contact with strong acids, oxidizing agents (peroxides), metal salts and polymerization catalysts.

Hazardous Decomposition Products: Thermal decomposition may produce various hydrocarbons and irritating, acrid vapors.

Hazardous Polymerization: Product will undergo hazardous polymerization at temperatures above 150 F (65 C). Hazardous polymerization will occur if contaminated with peroxides, metal salts and polymerization catalysts. Styrene degrades most plastics and corrodes copper and copper alloys. Keep away from oxidized agents, strong alkalis and strong acids in order to avoid exothermic reactions.

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.

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/m³ / 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

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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 styrene 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 (Sheepshead minnow), 9.1 mg / l / 96 hr.

Environmental Fate: Styrene released to soil is subject to biodegradation.

13- DISPOSAL CONSIDERATIONS

Waste Disposal Method: 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.

EMPTY DRUMS: "Empty containers", as defined fewer than 40 CFR 261.7 of OSHA, USA or other transportation regulations, are not classified as hazardous wastes.

RCRA Hazard Class: 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

Road and Rail Transport (ADG Code)

Proper Shipping Name: RESIN SOLUTION

Dangerous Goods Class: 3

Subsidiary Risk: None allocated

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Packing Group: III

Hazchem Code: 3[Y]

Emergency Information: IER Guide 14

Marine Transport (IMDG Code)

Proper Shipping Name: RESIN SOLUTION

Dangerous Goods Class: 3.2

Subsidiary Risk: None allocated

Packing Group: III

Air Transport (IATA Regulations)

Proper Shipping Name: RESIN SOLUTION

Dangerous Goods Class: 3

Subsidiary Risk: None allocated

Packing Group: III

Dangerous Goods Segregation (ADG Code):

Do not load and pack with Class 1 (Explosives), Class 2.1 (Flammable Gases - where flammable liquids/gases are in bulk), Class 2.3 (Toxic Gases), Class 4.2 (Spontaneously Combustible Substances), and Class 5.1 (Oxidizing Agents), Class 5.2 (Organic Peroxides), Class 7 (Radioactive Substances). Transport in accordance with State and Territory regulations for Dangerous Goods.

15- REGULATORY INFORMATION

Clean Air Act -Hazardous Air Pollutants (HAP): The following chemical(s) are listed as hazardous air pollutants (HAP) under the U.S. Clean Air Act Section 112(b)(1), (40 CFR 61): Styrene (CAS# 100-42-5) See Section 2 of this MSDS for amount.

Occupational Safety and Health Act (OSHA): This material is classified as a hazardous chemical under the criteria of the US Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200.

Canadian WHMIS: This material is classified by the Canadian Workplace Hazardous Material Information System as: B2 (flammable liquid) D2A (materials causing other toxic effects, very

toxic material) D2B (materials causing other toxic effects, toxic material) F (dangerously reactive material).

16-OTHER INFORMATION

Prepared By: Product Safety & Compliance Department

Approved Date: 21.12.2011

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