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BRIDGE DECK & ROADWAY REHABILITATION SYSTEMS

MSDS: PPC™ BINDER RESINS

Emergency Phone Number: (800) 373-7542

SECTION 1 IDENTIFICATION

Product Name: PPC™ Binder Resin, PPC™ "One Step" Resin, Reichhold 32-043-15, PPC™ MLS, PPC™ Binder Resin (BB)

Chemical Family: Unsaturated Polyester Resin in Styrene

SECTION 2

CAS No.	Chemical Identity	Exposure Limits-OSHA		Carcinogen Status		
		PEL	STEL	IARC	NTP	OSHA
100-42-5 Common Name Concentration	Styrene Styrene Monomer 35-45%	100 ppm	NE	Yes	NR	NR
Proprietary Concentration	Cobalt Compounds < .2%	.1 mg/m3	NE	Yes	NR	NR
Proprietary Concentration	Polyester Resin 55-65%	NE	NE	NR	NR	NR

NE=Not Established NR= Not Reviewed

SECTION 3 HEALTH HAZARD INFORMATION

Emergency Overview

Appearance: Purple liquid, pungent odor
FLAMMABLE liquid and vapor
Harmful if swallowed, can enter lungs and cause damage
May undergo hazardous polymerization

Special Hazards: Eye and skin irritant, Flammable

Routes of Exposure

Eye: Harmful to eyes. Vapors may cause irritation, tearing, blurred vision. Direct contact with resin may produce corneal damage

Skin: Harmful if absorbed though skin. Repeated and/or prolonged contact can cause irritation(possibly severe) and defatting/drying of skin. Absorption of liquid through the skin may produce damage to internal organs.

Inhalation: High concentration of vapors can cause irritation of respiratory tract including nose and throat, headaches, dizziness, nausea, weakness, collapse, coma, and death. Liver and kidney damage have been reported at high doses in animal studies.

Ingestion: Harmful if swallowed. Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likelyy to cause harmful effects. Swallowing large amounts may be harmful. May cause gastrointestinal disturbances, pain and discomfort.

Comments: Individuals with pre-existing disease, or a history of ailments involving kidney, liver, skin, respiratory system may be at a greater than normal risk of developing adverse effects when exposed to this material.

Styrene appears in the IARC but not NTP nor OSHA list of potential carcinogens (limited evidence for carcinogenicity in animals). A number of lifetime studies with styrene including those conducted in the NCI B-ioassay program have demonstrated styrene to be free of a carcinogenic effect.

No known ingredients which occur at greater than .1%, other than those listed above, are listed as a carcinogen in the IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, the NTP Annual Report on Carcinogens or OSHA 29 CFR 191-0.1001-1047, Sub part Z, Toxic and Hazardous Substances (Specifically Regulated Substances)

SECTION 4 EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: Immediately flush with large amounts of water for 15 minutes. See medical aid.

Skin Contact: Remove contaminated clothing. **Wash thoroughly with soap and water.** If irritation persists, seek medical aid. Wash contaminated clothing before reuse.

Inhalation: Remove from exposure. If **breathing has stopped or** is difficult, administer artificial respiration or oxygen as indicated. Seek medical aid immediately.

Ingestion: DO NOT INDUCE VOMITING. ASPIRATION HAZARD. Dilute immediately with water or milk. Never give liquids to an unconscious person. Call a physician. For aid to physician, suggest Poison Control Center.

SECTION 5 FIRE AND EXPLOSION HAZARD INFORMATION

Flash Point & Method: 32 C (89 F) PM **Autoignition Temp:** 914 F
Flammable Limits (% by volume/air): **Lower:** 1.1 **Upper:** 7

Extinguishing Media: Use carbon dioxide, dry chemical or foam. Water may be ineffective

Fire-fighting procedures: 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. Wear complete fire service protective equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus. Use water to cool fire-exposed container/structure/protect personnel. Large fires: fire fighting best done at a distance/protected location. Vapors are heavier than air. Do not use a solid stream of water as that may spread the fire. 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.

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. Exposure of containers to fire results in rapid product decomposition, container pressure build-up and failure, followed by vigorous burning with flare effect. Cleanup should not be attempted until all of the product has completely cooled.

SECTION 6 SPILL, LEAK, AND DISPOSAL INFORMATION

Spill or Leak Procedures: Stop leak if no risk involved. Stay upwind. Small spills: Take up with sand or other noncombustible absorbent material. Use non-sparking tools to clean up spill. Flush area with water. Dike large spills for later disposal. Contain runoff from fire control and dilution water. Large spills: dike to contain and pump into clean, dry, covered steel drums for disposal. Dispose of promptly. No smoking. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product.

Waste Disposal: Dispose of in accordance with local, state, and federal regulations. Liquid polyester resin waste having a flash point less than 140 F is a hazardous waste under RCRA having the characteristic of ignitability- D0001. This waste released into the environment in excess of 100 lbs must be reported to the National Response Center 91-800-424-8802). Polyester waste that is not a liquid as defined at 40 CFR Part 261.21 (a) (2) is not a RCRA hazardous waste.

SECTION 7 PERSONAL HANDLING INSTRUCTIONS

Handling: Avoid prolonged or repeated breathing of vapors, mists or fumes. Avoid prolonged or repeated contact with skin or eyes. Handle and use in accordance with OSHA 29CFR1910.106/local codes. Do not wear contaminated clothing. Discard contaminated footwear. See Section 10 – Reactivity Data.

Storage: Store in areas/buildings designed to comply with OSHA 1910.106. Keep in a closed, labeled container within a cool (well shaded), dry – ventilated area. Protect from physical damage.

Other: Not for use or storage in or around the home. Do not use pressure to empty drums. Do not use without fully understanding Section 9 – Reactivity Data. See Section 9 - Comments for additional information.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION INFORMATION

Exposure Guidelines: The Occupational Safety and Health Administration 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 peak above the acceptable ceiling concentration for an 8 hour shit. While the 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 hr 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 STEL for 15 minute exposure.

The US Occupational Safety and Health Administration has established for Cobalt Compounds (metal dust and fume) a PELof .1 mg/m3 for an 8-hour Time Weighted Average.

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 or face shield, 2) goggles and a face shield. Facilities storing or utilizing this material should be equipped with an eyewash station and an emergency 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.

Respiratory Protection: A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge 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 must be followed whenever workplace conditions warrant a respirator's use. Use a positive pressure air-supplied respirator if 1) there is any potential for an uncontrolled release or responding to substantial spill, 2) exposure levels are unknown, or 3) during other circumstances where air purifying respirators may not provide adequate protection.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Color: Purple
Odor: Pungent
Odor Threshold: .2 ppm Styrene
Physical State: Liquid
Solubility in Water: Insoluble at 20 C
Vapor Pressure: 6.12 mm Hg Styrene
Specific Gravity: 1.06-1.09
Boiling Point: 295 F (146 C)
Freezing Point: -22.7 F (-30.4 C)
Evaporation Rate: < 1 Butyl Acetate
Vapor Density: 3.6
% Volatile: 42% by weight
VOC Content: 452 gms/liter calculated but conforms to South Coast Air Quality Management District Rule 1162 designed for Fiberglass, and Cast Polymers Applications

SECTION 10 REACTIVITY DATA

Conditions Contributing to Instability(Incompatability): Avoid open flame, heat, oxidizing agents, free radical catalysts, and peroxide.

Incompatability: oxidizing agents, acids, caustic, metallic halides (salts)

Stability: Stable at room temperatures. Avoid temperatures above 80 F or contact with materials listed above. Higher temperatures or contact with listed materials promote exothermic decomposition and potential flash fire.

Hazardous Decomposition Products: smoke, carbon monoxide, carbon dioxide

SECTION 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- hr exposure (rabbits) to styrene is 6.6. Styrene: dermal LD50 (rabbit) 5g/kg. Styrene causes severe irritation at 72 hours.

Acute Inhalation Toxicity: Styrene: inhalation LC50(rat) 24g/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 concentration 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) 5g/kg

Subchronic: Styrene: inhalation NOEL (rat) 200ppm 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.

Styrene has been shown to cause probable hearing loss in rate exposed for at least six hours per day for three to thirteen weeks to 800 ppm of styrene in the air, as indicated by a rise in the auditory brainstem response threshold an dloss of hair cells of the inner ear. No effects were observed in rats exposed to styrene at 200 ppm for 13 weeks. Based on animal studies and human experience, no significant risk of hearing loss is expected in occupationally exposed persons.

Over exposure to styrene has been sugge3sted as a cause of the following effects in laboratory animals and may aggravate pre-existing disorders of the following organs in humans: mild, reversible kidney effects, effects on hearing, respiratory tract damage, testis damage and liver damage.

Chronic/carcinogenicity: The International Agency for Research on Cancer (IARC) has classified styrene in Group 2B, possibly carcinogenic to humans. IARC concluded that evidence of carcinogenicity from human health studies, was inadequate and based the classification on animal and other relevant data. The animal data included an increased incidence of cancer observed in a few studies in which rats and mice were give styrene by inhalation or by ingestion for their lifetimes. IARC considered the combined results of these cancer studies to provide “limited evidence” of carcinogenicity. Other

scientists consider the results of these studies inadequate to assess human carcinogenicity because these studies had either negative or statistically inconclusive results or had serious problems such as poor study design or very high mortality. Other relevant data included results from in-vivo and in-vitro genotoxicity studies. IARC also relied on data on styrene oxide including the results of two studies demonstrating stomach tumors in rats that were fed styrene oxide for their lifetime. Several epidemiological studies involving workers in the styrene, polystyrene or reinforced plastics industry have been conducted. Together, these studies show no increased cancer risk from occupational exposure to styrene.

Preliminary results of a recent inhalation study indicated that mice exposed to styrene showed increased incidence of lung tumors, however no dose response relationship was observed. The relevance of these findings is uncertain since data from other long-term animal studies and from epidemiological studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic.

The American Conference of Governmental Industrial Hygienists (ACGIH) has adopted the listing of Styrene as "A$-Not Classifiable as a Human Carcinogen". There is inadequate data on which to classify the agent in terms of its carcinogenicity in humans/and or animals.

This materials contains Cobalt Compounds which is listed by the IARC as a Group 2B cancer causing agent (possibly carcinogenic to humans).

Teratology: Styrene did not cause birth defects in orally-dosed rats, mice, rabbits and hamsters exposed to inhalation. Styrene given by inhalation for six hours a day during organ developmenthas been shown to be toxic to fetal mice at 250 ppm and to fetal hamsters at 1000 ppm. Information from human experience and the results of animal studies suggest no significant risk of birth defects or reproductive toxicity of styrene to humans.

Mutagenicity: Styrene has given mixed positive and negative results in a number of mutagenicity tests. It was not mutagenic in the Ames test without metabolic activation but gave negative and positive mutagenic results with metabolic activation. It has also given negative mutagenic results in Chinese Hamster Ovary Test, and the Forward Gene Mutation Test and positive results in the Sister Chromatid Exchange and the Chromosomal Aberration assay.

Additional Information: No toxicological data is available for this product. Based on the properties and similar polymers, the polyester resin is non-hazardous.

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity: Styrene is toxic to aquatic organisms and should not be release 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 for 96 hrs.

Environmental Fate: Styrene released to soil is subject to biodegradation. The results on one extensive biological screening study suggest that styrene will be rapidly destroyed by biodegradation in most aerobic environments, but the rate may be slow at low concentrations in aquifers and lake waters and in environments at low pH (6).

SECTION 13 DISPOSAL CONSIDERATIONS

Waste must be disposed of in accordance with federal, state, provincial and local regulations.

Container Disposal: Empty containers by removing the top and inverting to allow all free flowing product to drain. To meet regulatory criteria, the container is considered empty when less than 3% remains in the container. Additional special handling is not typically required and the empty container can be discarded with other non-hazardous trash.

RCRA Hazard Class: D001 (Ignitable): When discarded in its original purchased form, this material would be regulated under 40 CFR 261.21 as EPA Hazardous Waste Number D001 based on the characteristic of ignitability.

Note: Local disposal regulations may be more stringent and require additional restrictions or precautions. Customers should check with their local disposal company, municipal or state authority. Recycle of plastic or metal containers may require clean rather than empty containers. In this case the containers can be rinsed with mineral spirits until the containers are considered generally product free.

SECTION 14 TRANSPORTATION INFORMATION

DOT/IATA/IMDG: Non Bulk
DOT Shipping Name: Resin Solution
DOT Hazard Class: 3
UN/NA ID No.: UN 1866
DOT Packaging Group: PGIII
ERG Number: 127

DOT/IMDG: Bulk
Shipping Name: Resin Solution
Hazard Class: 3
ID Number: UN 1866
Packaging Group: III
ERG Number: 127
TDG: Bulk and Non Bulk
Shipping Name: Resin Solution
Hazard Class: 3
ID Number: UN 1866
Packaging Group: III
ERG Number: 127

Additional information: US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities of specific components.

SECTION 15 REGULATORY INFORMATION

Clean Air Act-Hazardous Air Pollutants (HAP): The following chemical(s) are listed as hazardous air pollutants (HAP) under the US Clean Air Act Section 112(b)(1), (40 CFR 61): Styrene (CAS #100-42-5) See Section 2 of this MSDS for amount. A maximum of .5% HAP's may be present in this product.

Clean Water Act-Priority Pollutants (PP): Styrene (100-42-5) is listed under Section 311 as a Hazardous Substance

OSHA: This material is classified as a hazardous chemical under the criteria of OSHA Hazard Communication Standarde, 29 CFR 1910.1200.

SARA Title III: Section 304-CERCLA: Styrene (100-42-5): RQ-1000 lbs

SARA Title III: Section 311/312-Hazard Communication Standard (HCS): This material is classified as an IMMEDIATE HEALTH HAZARD, DELAYED HEALTH HAZARD, FLAMMABILITY HAZARD, and REACTIVITY HAZARD under the US Superfund Amendment and Reauthorization Act

SARA Title III: Section 313 Toxic Chemical List (TCL): Styrene (100-42-5) Cobalt compounds.

TSCA Section 8 (b): Inventory Status: All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.

TSCA Section 12(b): Export Notification: This material does not contain any components that are subject to the US Toxic Substances Control Act Section (12 b) Export Notification requirements.

Canadian Inventory Status: All components of this material are listed on the Canadian Domestic Substances List (DSL)

Canadian WHMIS: This material is classified by the Canadian Workplace Hazardous Material Information System: B2 (flammable liquid) D2A(materials causing other toxic effects, very toxic material) D2B(materials causing other toxic effects, toxic material), F (dangerously reactive material)

California Proposition 65: WARNING: This material contains a chemical know to the State of California to cause cancer and birth defects or other reproductive harm.

Additional Canadian Regulatory Information: The following chemicals are listed on the WHMIS Ingredient Disclosure List: Styrene Monomer (100-42-5)

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.