
MATERIAL SAFETY DATA SHEET ChemShield – 5232 Resin (Base)

EMERGENCY CONTACT: (864) 680-1547

SECTION I. IDENTIFICATION

PRODUCT NAME: *ChemShield – 5232 Resin (Base)*
DATE: JULY 1, 2004
PRODUCT CLASS: Isophthalic Polyester
MANUFACTURER: Wolverine Coatings Corp., 204 Wellesley Drive, Spartanburg, SC 29307
TELEPHONE: (864) 342-9292

IMPORTANT: This material will not be sold for use in products for which prolonged contact with mucous membranes, abraded skin, or implantation within the human body is specifically intended. Because of the wide range of such potential uses, Wolverine Coatings Corporation is not able to recommend this material as safe and effective for such uses and assumes no liability for any such uses.

HAZARD STATEMENT: This material safety data sheet (MSDS) has been prepared in compliance with the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered a hazardous chemical under that standard.

EMERGENCY OVERVIEW

EMERGENCY AND FIRST AID PROCEDURES:

EYES - Immediately flush eyes with large quantities of clean water for at least 15 minutes. Get immediate medical attention.

SKIN - Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse.

INGESTION Do not induce vomiting. **ASPIRATION HAZARD:** This material may enter the lungs during vomiting. Immediately give the victim one or two glasses of water or milk to drink. Never give anything by mouth to an unconscious person. Get immediate medical attention.

INHALATION Remove victim to fresh air. Keep warm and quiet. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. Get immediate medical attention.

HMIS HEALTH: 2

FLAMMABILITY: 3

REACTIVITY: 1

PHYSICAL FORM:

Liquid

COLOR:

Amber Opaque

ODOR:

Pungent

HAZARDS:

Flammable liquid and vapor, harmful if swallowed—can enter lungs and cause damage. May undergo hazardous polymerization.

EXTINGUISHING MEDIA:

CO₂, foam, dry chemical, water fog.

CAS CHEMICAL NAME:

Mixture

SYNONYMS:

None

CHEMICAL FAMILY:

Polyester Resin

EMPIRICAL FORMULA:

Mixture

INTENDED USE:

Corrosion-Resistant Resin

SECTION II. INGREDIENTS

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OCCUPATIONAL EXPOSURE LIMITS:

INGREDIENTS	CAS #	WT %	OSHA PEL	OSHA STEL	ACGIH/TWA	ACGIH/STEL
Styrene	100-42-5	Note 1	100 ppm	Not estb	20 ppm	40 ppm
Polyester Resin	Proprietary	Note 1	Not ESTB	Not estb	Not estb	Not estb
Pigments:						
Titanium Dioxide	13463-67-7	<2	15 mg/m ³	Not estb	5 mg/m ³ as TI	Not estb
Iron Oxide	1309-37-1	<1	10 mg/ m ³	Not estb	5 mg/m ³ as Fe	Not estb

Note 1: The specific chemical identity and/or weight percent is being withheld as a trade secret.

EXPOSURE GUIDELINES: OSHA has established for styrene, a PEL of 100 ppm for an 8 hour TWA; 200 ppm for an acceptable ceiling concentration; and 600 ppm concentrations 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. ACGIH has established, for styrene, a TLV of 20 ppm TWA and 40 ppm STEL, 15-minute exposure, with a skin notation which indicates absorption through the skin which could add to the employee's exposure.

SECTION III. PHYSICAL DATA & CHEMICAL PROPERTIES

APPEARANCE AND ODOR:	Amber, opaque liquid; pungent odor.
PH:	Not applicable
VAPOR PRESSURE (MM HG @ 70°F):	6.12 mm/Hg
VAPOR DENSITY (AIR = 1):	3.6
BOILING POINT:	295 degrees F
MELTING POINT:	No data
SOLUBILITY IN WATER:	Nil
SPECIFIC GRAVITY:	1.10
MOLECULAR WEIGHT:	Mixture

SECTION IV. FIRE AND EXPLOSION DATA

FLASHPOINT (Seta): 89 degrees F (32 degrees C)

FLAMMABILITY LIMITS IN AIR: LEL 1.1 % (Styrene), **UEL** 7.0 % (Styrene)

EXTINGUISHING MEDIA: CO₂, foam, dry chemical, water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use. 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 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 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 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. Combustion may produce carbon monoxide, carbon dioxide, and irritation or toxic vapors and gases.

SECTION V. REACTIVITY DATA, TOXICOLOGICAL PROPERTIES, & ECOLOGICAL INFORMATION

REACTIVITY:

CHEMICAL STABILITY

Stable at normal temperatures and storage conditions.

CONDITIONS TO AVOID

Temperatures above 150 degrees F.

INCOMPATIBILITY (MATERIALS TO AVOID)

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

HAZARDOUS DECOMPOSITION PRODUCTS (FROM BURNING, HEATING OR REACTION WITH OTHER MATERIALS)

Thermal decomposition may produce various hydrocarbons and irritating, acrid vapors.

HAZARDOUS POLYMERIZATION

Product will undergo hazardous polymerization at temperatures above 150 degrees F. Hazardous polymerization will occur if contaminated with peroxides, metal salts, and polymerization catalysts.

CONDITIONS TO AVOID

Temperatures above 150 degrees F or contact with peroxides, metal salts or polymerization catalysts.

TOXICOLOGY:

ACUTE ORAL TOXICITY (LD50, RAT)

5 g/kg

ACUTE DERMAL TOXICITY (LD50, RABBIT)

5 g/kg

ACUTE INHALATION TOXICITY (LC50, RAT)

24 g/m³-4 hrs.

OTHER ACUTE EFFECTS

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, and muscular contraction.

IRRITATION EFFECTS DATA

Draize Skin Primary Irritation Score (range 0-8) for a 4-hour exposure (rabbits) to styrene is 6.6.

CHRONIC/SUBCHRONIC DATA

SUBCHRONIC: 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. Styrene has been shown to cause probable hearing loss in rats 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 and loss 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. Overexposure to styrene has been suggested 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: The 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 or other relevant data. The animal data included an increased incidence of cancer observed in a few studies in which rats and mice were given 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 result 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 epidemiology studies involving workers in the styrene, polystyrene or reinforced plastic industries 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 an increased incidence of lung tumors, however no dose response relationship was observed. The relevance of these finding is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic. ACGIH has adopted the listing of styrene as “A4-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.

TERATOLOGY: Styrene did not cause birth defects in orally dosed rats, mice rabbits and hamsters exposed by inhalation. Styrene given by inhalation for six hours a day during organ development has 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.

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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 by gave negative and positive mutagenic results with metabolic activation. It has also given negative mutagenic results in the 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

Based upon properties and similar polymers, the polyester portion of this material is not hazardous.

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. The results of 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 VI. HEALTH HAZARDOUS DATA

ROUTES OF EXPOSURE

Inhalation, ingestion, skin, and eye

EXPOSURE STANDARDS

No standards established for this product. Maintain air contaminant concentrations in the workplace at the lowest feasible levels.

HEALTH HAZARDS

Eye irritant.

Skin irritant.

Respiratory tract irritant.

TARGET ORGANS

Eye, skin, respiratory system

SIGNS AND SYMPTOMS OF EXPOSURE (ACUTE EFFECTS)

INHALATION: Harmful if inhaled. Effects from exposure may include headaches, fatigue, nausea, sensation of drunkenness, central nervous system depression and pulmonary edema. Inhalation of vapor or aerosol may cause irritation to the respiratory tract (nose, throat, lungs).

SKIN: Harmful if absorbed through skin. Contact causes skin irritation. Prolonged or repeated skin contact can result in defatting and drying of the skin.

EYES: Harmful to eyes. Direct contact with this material causes eye irritation. Symptoms may include stinging, tearing, redness and swelling.

INGESTION: Harmful if swallowed. Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful. Effects from exposure through ingestion may include gastrointestinal disturbances, pain and discomfort. Effects of exposure by ingestion may also include those indicated by the inhalation route. Styrene is harmful or fatal if liquid aspirated into the lungs.

SIGNS AND SYMPTOMS OF EXPOSURE (POSSIBLE LONGER TERM EFFECTS)

Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans and may aggravate pre-existing disorders of these organs: central nervous system effects, effects on hearing, and respiratory tract damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, eye, or respiratory tract disorders.

CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC

This material contains styrene which is listed by IARC as a group 2B cancer-causing agent (possibly carcinogenic to humans).

SECTION VII. SPILL OR LEAK PROCEDURES

Containment Techniques

SMALL SPILLS: Absorb spill with inert material (e.g. dry sand or earth).

LARGE SPILLS: Stop spill at source. Prevent spilled material from spreading. Do not allow spilled material to contaminate soil or enter drains, sewers, streams or other bodies of water.

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Clean-Up Procedures

SMALL SPILLS: Place absorbed material in a chemical waste container. Use non-sparking tools to clean up spill. Remove all sources of ignition. NO SMOKING.

LARGE SPILLS: Pump or vacuum spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other waste material to waste containers for disposal.

Other Emergency Advice

Persons not wearing protective equipment should be excluded from the area of the spill until clean-up has been completed. Immediately notify authorities of any reportable spill as may be required pursuant to regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Eye Protection

Wear safety glasses with side shields and a face shield or goggles and a face shield.

Hand Protection

Wear chemical resistant gloves such as polyvinyl or Viton®.

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

Protective Clothing

If splashing is likely, wear impervious clothing and boots to prevent repeated or prolonged skin contact.

Engineering Controls

Local ventilation may be required during certain operations to maintain concentrations below recommended exposure limits.

Work and Hygienic Practices

Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated.

SECTION IX. SPECIAL PRECAUTIONS

HMIS HEALTH: 2

FIRE: 3

REACTIVITY: 1

SIGNAL WORD: Warning

STORING PRECAUTIONS: 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.

HANDLING PRECAUTIONS: 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. Empty containers may retain product residue. 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 returned to drum reconditioner or properly disposed.

OTHER PRECAUTIONS: Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA).

TRANSPORT INFORMATION:

DOT Non-Bulk Shipping Name

Resin Solution / 3 / UN1866 / PG III / ERG No. 127

DOT Bulk Shipping Name

Resin Solution / 3 / UN1866 / PG III / ERG No. 127

IMO Shipping Name

Refer to Bill of Lading

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ICAO/IATA Shipping Data

Resin Solution / 3 / UN1866 / PG III / ERG No. 127

DISPOSAL CONSIDERATIONS: This material which has not been polymerized, and containers that are not empty and which contents have not been polymerized, if discarded, would be regulated as hazardous waste under RCRA. Treatment or disposal must be completed at a RCRA permitted Treatment, Storage and Disposal Facility. Empty containers, as defined under 40 CFR 161.7, are not classified as hazardous waste. 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.

SECTION X. REGULATORY INFORMATION

US Federal Regulations:

Toxic Substances Control Act (TSCA)

All components of this material are listed on the TSCA inventory.

Toxic Substance Control Act (TSCA) 12(b) Component(s)

This material does not contain any components that are subject to TSCA Section 12(b) Export Notification requirements.

OSHA Hazard Communication Standard (29CFR1910.1200) Hazard Class(es)

This material is classified as a hazardous chemical under the criteria of OSHA 29 CFR 1910.1200.

EPA SARA Title III Section 312 (40CFR370) Hazard Class

Material is classified as an IMMEDIATE HEALTH HAZARD, DELAYED HEALTH HAZARD, FLAMMABILITY HAZARD and REACTIVITY HAZARD.

EPA SARA Title III Section 313 (40CFR372) Toxic Chemicals Above “de minimis” Level

Styrene (100-42-5)

State Regulations:

Proposition 65 Substances (components known to the State of CA to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the “Safe Drinking Water and Toxic Enforcement Act of 1986”)

WARNING: This product contains a chemical known to the State of California to cause cancer. Styrene Oxide
Aniline (CAS# 62-53-3).

New Jersey Trade Secret Registry Number(s)

None

International Regulations:

Canada

DSL

All components of this material are listed on the Canadian Domestic Substance List.

WHMIS Hazard Classification

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)

WHMIS Ingredient Disclosure List

Styrene Monomer (CAS# 100-42-5)

WHMIS Trade Secret Registry Number(s)

None

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

ISSUE DATE: 07/2004

CONTACT: PRODUCT SAFETY DIRECTOR.

The information and recommendations contained herein are accurate to the best of our knowledge and belief. Conditions of handling and use are beyond our control, thus we make no guarantee of results and assume no liability for damages. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described here, we cannot guarantee that only these exist. Determination of suitability of the chemical is the sole responsibility of the user. Chemical users should satisfy themselves that conditions and methods of use assure that the chemical is used safely. No representations or warranties, either expressed or implied of merchantability, fitness for a particular purpose or any other nature, are made hereunder with respect to the information herein, or to the chemical to which the user refers.