

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 19634

Page: 1

PRODUCT NAME: DERAKANE (R) 411-C-50 VINYL ESTER RESIN

Effective Date: 12/30/88 Date Printed: 05/05/89

MSDS:001550

1. INGREDIENTS: (% w/w, unless otherwise noted)

Styrene monomer	CAS# 000100-42-5	40-60%
Vinyl ester resin	CAS# 036425-15-7	BAL.

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 294F, 146C (based on styrene)
VAP. PRESS: 7 mmHg @ 20C (based on styrene)
VAP. DENSITY: 3.6 (based on styrene)
SOL. IN WATER: Insoluble.
SP. GRAVITY: 1.020-1.060
APPEARANCE: Straw yellow, viscous liquid.
ODOR: Pungent styrene odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 70-80F
METHOD USED: PMCC ASTM D-93

FLAMMABLE LIMITS
LFL: 0.88% (based on styrene)
UFL: 6.80% (based on styrene)

EXTINGUISHING MEDIA: Water fog, foam, alcohol foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Upon exposure to heat or flame, an exothermic reaction can develop, followed by decomposition of

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3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

product. Keep vapors away from possible ignition sources.

FIRE-FIGHTING EQUIPMENT: Wear goggles and positive-pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid storage in direct sunlight and at temperatures above 120F, 49C.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Pyrolysis products such as CO.

HAZARDOUS POLYMERIZATION: May occur. Avoid contact with metal salts such as ferric and aluminum chlorides, unintended contact with peroxides, and depletion of inhibitor levels. Avoid exposure to direct sunlight or temperatures above 120F (49C).

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Treat as a flammable liquid; keep heat, flame or spark producing equipment away. Protect personnel from styrene vapors. Soak up spills in absorbent material such as sand and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Solvents are not recommended for cleanup unless the recommended exposure guidelines and safe handling practices for the specific solvent are followed. Consult appropriate solvent MSDS for handling information and exposure guidelines. For large spills, evacuate upwind of spills and contain with dike.

DISPOSAL METHOD: Resin can be disposed of through burning in an adequate incinerator or burying in an approved landfill in accordance with federal, state, and local regulations.

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6. HEALTH HAZARD DATA:

EYE: May cause moderate irritation. May cause slight corneal injury. Vapors may irritate eyes. Vapors may cause lachrymation (tears).

SKIN CONTACT: Prolonged exposure may cause skin irritation. Repeated exposure may cause skin burns. Material may stick to skin causing irritation upon removal.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is expected to be >2000 mg/kg.

INGESTION: Single dose oral toxicity is believed to be low. The oral LD50 for rats is expected to be >4000 mg/kg. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: Excessive vapor concentrations are attainable and could be hazardous on single exposure. Signs and symptoms of excessive exposure may be anesthetic or narcotic effects. Excessive exposure may cause irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures to high amounts may cause central nervous system, liver, kidney effects, and respiratory or eye irritation. Repeated excessive exposures to smaller amounts may cause central nervous system effects and respiratory or eye irritation. Styrene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations (sixteen times the TLV and higher); however, the relevance of this to humans is unknown. For hazard communication purposes under OSHA Standard 29 CFR Part 1910.1200, this mixture contains a component (styrene) which is listed as a potential carcinogen by IARC (International Agency for Research on Cancer). Neither the data from various long-term animal studies nor from epidemiology of workers exposed to styrene provide an adequate basis to conclude that styrene is carcino-

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M A T E R I A L S A F E T Y D A T A S H E E T

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6. HEALTH HAZARD DATA: (CONTINUED)

genic. In laboratory animals; styrene did not produce any effects on the fetus even at exposure concentrations having an adverse effect on the mother. In animal studies, styrene has been shown not to interfere with reproduction. Results of in vitro (test tube) and animal mutagenicity tests on styrene have been inconclusive.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

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8. HANDLING PRECAUTIONS: (CONTINUED)

EXPOSURE GUIDELINE(S): Styrene, monomer: OSHA PEL is 100 ppm TWA, 200 ppm Ceiling and 600 ppm Peak. Dow uses and recommends the ACGIH TLV of 50 ppm TWA and 100 ppm STEL.

VENTILATION: Provide general and/or local exhaust ventilation to control airborne concentrations below the recommended exposure guideline.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Eye wash fountain should be located in immediate work area.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

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9. ADDITIONAL INFORMATION: (CONTINUED)

Practice good care and caution to avoid skin and eye contact and to avoid breathing vapors. For additional precautions, see Dow Bulletin, DERAKANE (R) Vinyl Ester Resins - Fabricating Tips.

MSDS STATUS: Revised Section 9

SARA 313 INFORMATION:

This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
STYRENE	000100-42-5	40 -50 %

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