



MSDS

(Material Safety Data Sheet)

SECTION 1: PRODUCT IDENTIFICATION

Product name.....Blue Seal
Product identification numbers 11XX-T, 12XX-T, 13XX-T
Trade name vinyl-ester resin
TDG shipping name resin solution
TDG classification..... PIN-UN1866, Class 3, PKG. GRP III
WHMIS classification B2, D2A, F
DSL statusON DSL

SECTION 2: HAZARDOUS IDENTIFICATION

Emergency Overview

Appearance: Liquid

FLAMMABLE LIQUID AND VAPOR. MAY AFFECT THE CENTRAL NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHED OR NAUSEA. MAY BE HARMFUL IN INHALED. ASPIRATION HAZARD IF SWALLOWED – CAN ENTER LUNGS AND CAUSE DAMAGE. MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION. PROLONG OR REPEATED CONTACT MAY DRY SKIN, CAUSE IRRITATION AND BURNS.

Potential Health Effects

Skin Contact

Prolonged or repeated exposure may cause skin irritation, de-fatting and/or dermatitis.

Eye Contact

Contact with liquid or vapors may cause irritation with temporary corneal injury.

Inhalation

Excessive inhalation of vapors can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache and unconsciousness.

Ingestion

Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.

Inhalation

Breathing of vapor or mist is possible. Breathing aerosol and/or mist is possible when material is sprayed. Aerosol and mist may present a greater risk of injury because more material may be present in the air than from vapor alone. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable.

Aggravated Medical Condition

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material; respiratory tract, skin, lung, liver, central nervous system, male reproductive system, auditory system.

Symptoms

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include; metallic taste, stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness) and other central nervous system effects, loss of coordination, confusion, liver damage.

Target Organs

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals; mild, reversible kidney effects, effects on hearing, respiratory tract damage (nose, throat, and airways), testis damage, liver damage, overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: mild effects on color vision, effects on hearing, respiratory tract damage (nose, throat, and airways), central nervous system effects.

Carcinogenicity

Styrene is listed as a possible human carcinogen by the international Agency for Research on Cancer (IARC) and as reasonably anticipated to be a human carcinogen by the National Toxicology Program (NTP).

Reproductive hazard

This material (or a component) has been shown to cause harm to the fetus in a laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to human is uncertain.

Other information

Styrene readily reacts with low concentrations of halogens (for example, fluorine, chlorine, bromine, or iodine) to form a tear-producing substance.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| INGREDIENT: | CAS#: | ACGIH TLV/OSHA PEL: | %W/W: |
|-----------------|----------|---------------------|--------|
| Styrene monomer | 100-42-5 | 50 PPM | 24-30% |

SECTION 4: FIRST AID MEASURES

Eye Contact

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin Contact

Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

Ingestion

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation

Do not induce vomiting. Seek medical attention. If vomiting occurs, keep head below hips to prevent aspiration of liquid into lungs.

NOTE TO PHYSICIAN: If aspirated, rapid absorption may occur through lungs and cause systemic effects, so the decision of whether to induce vomiting or not should be made by a physician. Endotracheal and/or esophageal control is suggested if lavage is performed. The danger from lung aspiration must be weighed against toxicity when considering emptying stomach. No specific antidote. Treatment based on judgment of a physician in response to the reactions of the patient.

SECTION 5: FIREFIGHTING MEASURES

| | |
|--------------------------|---|
| Flammability | yes, when exposed to excessive heat, sparks or open flame |
| Flashpoint | 27°C/81°F (D3278) |
| Flammability Limits | |
| Lower | 0.9% (Styrene) |
| Upper | 6.8% (Based on styrene) |
| Auto ignition temp | 914 F/490 C (Styrene) |

Extinguishing Media

Water fog, dry chemical, carbon dioxide, foam

Hazardous Combustion Products

Carbon dioxide, carbon monoxide, various hydrocarbons, etc.

Explosion Data:

Sensitivity to mechanical impact No

Sensitivity to static discharge Yes

Take precautions against static.

Fire-fighting Measures

Wear positive pressure self-contained breathing apparatus (SCBA) with a full face piece and protective fire-fighting clothing. If protective equipment is not available or not used, fight fire from a protected location or distance.

Fire-fighting Instructions

Keep people away. Isolate fire area. Eliminate ignition sources. Move container from fire area if possible. Burning liquids may be moved with water to protect personnel. Water fog applied gently may be used as a blanket to extinguish fire. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Do not use direct water stream, which may spread fire. Water may not be effective in extinguishing fire.

NFPA flammable and combustible liquids classification

Flammable Liquid Class IC

All five-gallon pails and larger metal containers including tank cars and tank trucks should be grounded and/or bonded when material is transferred.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Steps to Be Taken in Case Material is Released or Spilled

Small spill

Absorb liquid on paper, vermiculite, floor absorbent or other absorbent material.

Large spill

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing adequate protective equipment should be excluded from area of spill until cleanup has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid (using explosion-proof equipment) to salvage tank. Remaining liquid may be taken up on sand, floor absorbent or other absorbent material and shoveled into containers

Personal precautions

For personal protection see section 8. Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, stream or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal.

Environmental precautions

Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify authorities as required, that a spill has occurred.

Methods for cleaning up

Absorb liquid vermiculite, floor absorbent or other absorbent material.

SECTION 7: HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective gloves. As with all products of this nature, good personal hygiene is essential. Hands and other exposed areas should be washed thoroughly with soap and water after contact, especially before eating and or/smoking. Regular laundering of contaminated clothing is essential to reduce indirect skin contact with this material. Do not use pressure to empty container. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77.

Storage Requirements

Store in a cool, dry place at 75°F or lower. Do not store near extreme heat, open flame, or sources of ignition. Maintain inhibitor and dissolved oxygen level. Do not blanket or purge with an inert gas to avoid depleting the oxygen concentration. Keep containers tightly closed when not in use. Store out of direct sunlight.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

General advice

These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). OSHA has formally endorsed a styrene industry proposal for a voluntary 50 ppm workplace limit on styrene. Members of the Styrene Information and Research Council (SIRC), Composites Institute (CI), Composite Fabricators Association (CFA), International Cast Polymers Association (ICPA) and National Marine Manufacturers Association (NMMA) have

agreed to use either engineering controls, work practices or respiratory protection to achieve this voluntary limit for styrene.

Personal Protective Equipment

Eye Protection

Use chemical safety glasses or goggles.

Skin and body protection

Wear resistant gloves. To prevent repeated or prolonged skin contact, wear impervious clothing and boots. Wear normal work clothing covering arms and legs.

Respiratory Protection

Use NIOSH or CSA approved organic vapor chemical cartridge respirator when concentration exceeds TLV or upper respiratory tract irritation occurs.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--------------------------|-------------------------------|
| Physical state | liquid |
| Boiling point (C) | 146°C/294°F (styrene) |
| Freezing point..... | undetermined |
| Specific gravity | 1.32 @ 20° C/68° F |
| Vapor pressure..... | 8.532 hPa @ 77°F/25°C |
| % Volatile..... | 20-21% |
| Solubility in water..... | slight |
| Appearance & odor..... | colored, pungent styrene odor |

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability

Stable.

Conditions to avoid

Avoid heat, open flame, and prolonged storage at elevated temperatures.

Incompatible products

Acids, aluminum chloride, halogens, iron chloride, metal salts, peroxides, strong alkalis, strong oxidizing agents, UV light.

Hazardous decomposition products

Carbon dioxide and carbon monoxide, phenols, toxic fumes, various hydrocarbons.

Hazardous reactions

Product can undergo hazardous polymerization. Avoid exposure to excessive heat, peroxides and polymerization catalysts.

SECTION 11: TOXICOLOGICAL INFORMATION

Skin Contact

Prolonged or repeated exposure may cause skin irritation, de-fatting and/or dermatitis.

Eye Contact

Contact with liquid or vapors may cause irritation with temporary corneal injury.

Inhalation

Excessive inhalation of vapors can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache and unconsciousness.

Ingestion

Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal.

Effect of Acute Exposure to Material

Over-exposure may produce drowsiness, weak unsteady gait, and narcosis.

Effects of Chronic Exposure to Material

The International Agency for Research on Cancer (IARC) has classified styrene as a possible carcinogen to humans.

LD 50 of Material

For skin absorption (Rabbits)..... >2000mg/kg
For oral (Rats)..... >4000mg/kg

Exposure Limit of Material

TLV for styrene 50 PPM
Short term exposure limit (STEL) 100 PPM

Carcinogenicity of Material

This mixture contains component(s), which are listed as potential carcinogens by IARC.
Component listed: Styrene.

Reproductive Effects

May cause adverse reproductive effects in animals.

SECTION 12: ECOLOGICAL INFORMATION

Biodegradability

| | |
|-----------------------------|-------------------|
| Biodegradability – Product: | no data available |
|-----------------------------|-------------------|

Biodegradability – Components

| | |
|-----------|-----------------------|
| Styrene : | Readily biodegradable |
|-----------|-----------------------|

Bioaccumulation

| | |
|----------------------------|-------------------|
| Bioaccumulation – Product: | no data available |
|----------------------------|-------------------|

Ecotoxicity Effects

| | |
|-------------------------------|---|
| Toxicity to fish – Components | |
| Styrene | LC 50: 4.02 mg/l Exposure time: 96 h |

| | |
|--|--|
| | Species: Pimephales promela (fathead minnow) |
|--|--|

Toxicity to daphnia and other aquatic invertebrates

| | |
|---------|---|
| Styrene | EC 50: 4.7 mg/l Exposure time: 48 h Species: Water flea (Daphnia magna) |
|---------|---|

Toxicity to algae

| | |
|---------|--|
| Styrene | EC 50: > 4.9 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae) |
|---------|--|

Toxicity to bacteria

| | |
|---------|--|
| Styrene | EC 50: ca. 500 mg/l Exposure time: 0.5 h Species: activated sludge |
|---------|--|

SECTION 13: DISPOSAL CONSIDERATION

Waste disposal methods

Contaminated absorbent may be deposited in a landfill in accordance with local, state and federal regulations. Destroy by liquid incineration in accordance with applicable regulations. Dispose of in accordance with all applicable local, state and federal regulations. Do not discharge effluent containing this product into lakes, streams, ponds or estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination Systems (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Dispose of in accordance with all applicable local, state and federal regulations.

SECTION 14: TRANSPORT INFORMATION

Special Shipping Information (Air, Ocean, Rail, and Roadways)

UN 1866, Resin Solution, classification 3, Flammable liquid, Packaging Group III

SECTION 15: REGULATORY INFORMATION

California Prop. 65

| | |
|---|---------|
| WARNING! This product contains a chemical known to the State of California to cause cancer. | BENZENE |
| WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. | BENZENE |

SARA Hazard Classification

| | |
|-----------------------------|----------------------------------|
| SARA 311/312 Classification | Reactivity hazard Fire Hazard |
|-----------------------------|----------------------------------|

| | |
|--|--|
| | Acute health hazard Chronic health hazard |
|--|--|

SARA 313 Component(s)

| | |
|---------|--------|
| Styrene | 39.82% |
|---------|--------|

Notification status

| | |
|--|-------------------------|
| US. Toxic Substances Control Act | y (positive listing) |
| Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. GAZ Part II, Vol. 133) | q (quantity restricted) |
| Australia. Industrial Chemical (Notification and Assessment) Act | q (quantity restricted) |
| New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand | n (negative listing) |
| Japan. Kashin-Hou Law List | n (negative listing) |
| Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act | n (negative listing) |
| China. Inventory of Existing Chemical Substances | q (quantity restricted) |

Reportable quantity - Product

| | |
|--|-----------|
| US. EPA CERCLA Hazardous Substances (40 CFR 302) | 2,510 lbs |
|--|-----------|

Reportable quantity Components

| | | |
|---------|----------|-----------|
| Styrene | 100-42-5 | 1,000 lbs |
|---------|----------|-----------|

| | HMIS | NFPA |
|------------------|------|------|
| Health | 2 | 2 |
| Flammability | 3 | 3 |
| Physical hazards | 2 | - |
| Instability | - | 2 |
| Specific hazard | - | - |

SECTION 16: OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Blue Seal's Environmental Health and Safety Department (1-855-202-3900).