

MATERIAL SAFETY DATA SHEET

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This MSDS complies with 29 CFR 1910.1200 (Hazard Communication).

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SECTION I - PRODUCT IDENTIFICATION  
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Product Name: CORVE8440 VINYL ESTER RESIN  
General or Generic ID: Unsaturated Polyester Resin  
Hazard Classification: Flammable Liquid

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SECTION II - HAZARDOUS COMPONENTS  
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INGREDIENT	CAS NO.	PERCENT	OSHA-PEL	ACGIH-TL NOTE
Unsaturated Polyester Base Resin	See Index	60.0	None-Estb.	None-Est
Styrene	100-42-5	40.7	50 ppm TWA	50 ppm (1&2)

(1) OSHA has formally endorsed a styrene industry proposal for a voluntary 50 ppm PEL for workplace exposure to styrene. This proposal was agreed upon by representatives of the UPR industry. The OSHA STEL is 100 ppm. The ACGIH recently changed the TLV for styrene from 50 ppm to 20 ppm, and the STEL from 100 ppm to 40 ppm.

(2) HMIS Rating for Styrene: Health=2; Fire=3; Physical Hazard=2

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SECTION III - PHYSICAL DATA  
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PROPERTY	MEASUREMENT
Initial Boiling Point	For Styrene 293.40 Deg F (145.22 Deg C) @ 760.00 mm Hg
Vapor Pressure	For Styrene 4.3 mm Hg 68 Deg F (20 Deg C)
Specific Gravity	1.110 - 1.130 @ 77 Deg F (25 Deg C)
Vapor Density	Air = 1 3.6
Evaporation Rate	Slower than Ether

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SECTION IV - FIRE AND EXPLOSION DATA  
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Flash Point: 88 Deg F (31.1 Deg C) for Volatile Component

Flammable: (Lowest Value of Styrene) Lower - 1.1%  
(Upper Value of Styrene) Upper - 6.1%

Extinguishing Media: Foam, carbon dioxide; dry chemical, or water fog.

Hazardous Decomposition Products: May form toxic materials such as carbon dioxide, carbon monoxide, and various hydrocarbons.

Special Firefighting Procedures: Wear self-contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode when fighting fires.

Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by ignition sources at locations distant from material handling point.

Never use welding or cutting torch on or near drum (even empty) because product vapor can ignite explosively.

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SECTION V - HEALTH DATA  
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Permissible Exposure Level: Not established for product. See Section II.

POTENTIAL HEALTH EFFECTS

Eyes - Can cause severe irritation, redness, tearing, blurred vision.

Skin - Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.

Inhalation - Excessive inhalation of vapors can cause nasal irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation.

Swallowing - Can cause gastrointestinal irritation, nausea, vomiting, diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis.

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SECTION V - HEALTH DATA (continued)  
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## TARGET ORGAN EFFECTS

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals, and may aggravate pre-existing disorders of these organs in humans: mild, reversible kidney effects, effects on hearing, respiratory tract (nose, throat, and airways), testis, liver. 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, mild effects on color vision, effects on hearing, and respiratory tract damage (nose, throat, and airways).

## FIRST AID

- If on Skin: Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated clothing before re-use.
- If in Eyes: Flush with large amount of water, lifting upper and lower lids occasionally. Get medical attention.
- If Swallowed: Do not induce vomiting. Keep person warm, quiet, and get medical attention. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal.
- If Inhaled: If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet, and get medical attention.

## PRIMARY ROUTE(S) OF ENTRY

Inhalation, skin absorption, skin contact, eye contact.

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SECTION VI - REACTIVITY DATA  
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Hazardous Polymerization: Possible

Stability: Stable

Incompatibility: Avoid contact with strong alkalies, strong mineral acids, and oxidizing agents.

Conditions to Avoid: Exposure to excessive heat or open flame, storage in open containers, prolonged storage (6 months), storage above 100 Deg F (38 Deg C), and contamination with oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, low molecular weight hydrocarbons, and organic acids.

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SECTION VII - SPILL OR LEAK PROCEDURES  
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Eliminate all ignition sources (flares, flames (including pilot lights), and electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, shovel or pump to tank or drums. Remaining liquid may be absorbed in sand, clay, earth, or other absorbent material and shoveled into containers.

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SECTION VIII - PROTECTIVE EQUIPMENT TO BE USED  
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Respiratory Protection: If PEL of the product or any component is exceeded, an NIOSH/MSHA approved respirator is advised in absence of proper engineering control (see your safety equipment supplier). Engineering or administrative controls should be implemented to reduce exposure.

Ventilation: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Protective Gloves: Wear chemical resistant gloves that afford proper protection to the hands, such barrier creams maybe used in some environments as long as proper skin protection is afforded.

Eye Protection: Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your safety equipment supplier.)

Other Protective Equipment: Work clothing that covers arms and legs.

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SECTION IX - SPECIAL PRECAUTIONS  
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Containers of this material may be hazardous when empty. Since empty containers retain product residues (vapors, liquid, and/or solids), all hazard precautions given in this MSDS must be observed.

The information accumulated herein is believed to be accurate, but is not warranted to be, whether originating with Interplastic or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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SECTION X - SUPPLEMENT  
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Styrene has been identified as a possible human carcinogen by the International Agency for Research on Cancer (IARC). The IARC determination is based on "limited evidence" in animals and other "relevant data." IARC concedes there is "inadequate evidence" on humans for its findings.

The Styrene Information and Research Center (SIRC) recently sponsored studies to evaluate potential health effects in laboratory rats and mice exposed by inhalation to styrene for six hours per day for five days per week of their lifetime. The rat study, completed in 1996, showed no increased incidence of tumors related to styrene exposure at levels up to 1000 parts per million (ppm). The results of the mouse study are in the process of being analyzed, and so far only the lungs have been evaluated. The number of lung tumors observed at exposure levels of 20 to 160 ppm was increased as compared to the number of tumors seen in unexposed mice. These lung tumor results from the mouse study have been added to the MSDS for styrene.

The lung effects in the new mouse study are in contrast to findings in other studies in both rodents and humans, including the recent SIRC-sponsored study in rats. No link between styrene exposure and an increased incidence of cancer has been found collectively in eight studies of workers in the reinforced plastics and composites industries prior to 1992, or in two subsequent studies of composites/reinforced plastics workers. All together, over 90,000 people have been studied. Exposure levels in these industries are above the levels routinely measured in styrene and polystyrene production.

Also in the recent animal studies, irritation and degenerative effects on the olfactory cells in the nose (responsible for the sense of smell) were observed in mice exposed repeatedly by inhalation to 20 ppm and above, and in rats exposed to 50 ppm and above. Atrophy (degeneration) of the olfactory nerve was observed at levels at or above 40 ppm in mice and at or above 500 ppm in rats. SIRC is conducting follow-up research to further understand these findings and their possible importance to humans. Liver damage has been reported in mice at exposure levels of 100 ppm or above; comparable liver damage has not been reported in rats or humans exposed to styrene. It appears that mice are more sensitive to styrene than are other species. Information about potential damage to olfactory cells, irritation in the respiratory tract, and potential liver damage has been added to the MSDS for styrene.

We recommend that the precautions in this MSDS be followed.

## SECTION XI - SUPPLIER NOTIFICATION

This product contains toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372. Please refer to "Section II - Hazardous Components" for the specific product and concentration.

## SECTION XII - TRANSPORTATION INFORMATION

Regulatory Information	UN Number	Proper Shipping Name	Class	Packaging Group	Label	Additional Information
US DOT	UN-1866	Resin Solution	3	III	Flammable Liquid	RQ for Styrene=1000 pounds*

\* For shipments in a single container exceeding the RQ for styrene the letters RQ must appear in the proper shipping name.

## BASE RESIN CAS INDEX

The base resins indicated under Section II are identified by one or more of the following CAS numbers:

113060-15-4	28572-30-7	58182-50-6	67859-89-6
135108-89-3	28679-80-3	61224-63-3	49624-93-3
141224-31-9	29011-83-4	62569-28-2	79-41-1
14807-96-6	29350-58-1	64386-66-9	
149717-53-3	29403-69-8	67380-21-6	
155122-62-6	29403-69-8	64386-67-0	
21645-51-2	30110-00-0	67599-39-7	
25037-66-5	30946-90-8	67712-08-7	
25101-03-5	31260-98-7	67845-68-5	
25215-72-9	31472-46-5	67939-08-6	
25464-21-5	32505-78-5	67939-40-6	
25609-89-6	32677-47-7	68002-44-8	
25749-46-6	32762-75-7	68140-84-1	
25749-49-9	36346-15-3	68140-88-5	
25987-82-0	36425-15-7	68171-28-8	
26098-37-3	36425-16-8	68238-98-2	
26123-45-5	37339-47-2	68299-40-1	
26265-08-7	37347-86-7	68492-68-2	
26301-26-8	37999-57-8	68511-26-2	
26588-55-6	42133-45-9	68585-94-4	
26795-76-6	464920-01-2	68647-07-4	
27342-37-6	52453-94-8	72259-64-4	
27837-75-8	54228-09-0	81192-92-9	
27863-48-6	56083-98-8	9003-20-7	
28472-89-1	56083-99-9	9065-68-3	
28516-30-5	57863-48-6	37625-93-7	