

STYPOL[®]

RSP 15021

Pre-Promoted Unsaturated Polyester Resin

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Description

STYPOL[®] RSP15021 is a pre-promoted, unsaturated polyester resin containing styrene monomer. It is especially formulated for building reinforced plastic parts using closed molding processes. STYPOL[®] RSP15021 has a long gel time and low exotherm to enable infusion of large, thick parts.

Distinguishing Characteristics

STYPOL[®] RSP15021 offers the following features:

- Long gel time and low exotherm enables infusion of large, thick parts
- Good surface cosmetics
- Good strength and toughness for crack resistance
- Low viscosity for good fiber wetting and mold filling performance

Typical Liquid Properties (at 77°F)

Liquid properties of **Stypol[®]RSP15021** are shown below. These values may or may not be manufacturing control criteria; they are listed for a reference guide only. Particular batches will not conform exactly to the numbers listed because storage conditions, temperature changes, age, testing equipment (type and procedure) can each have a significant effect on the results. Products outside of these readings can perform acceptably. Final suitability of this product is in the end use performance.

Test	RSP15021
Viscosity ¹	110 cps
Gel Time ²	100 minutes
Weight per Gallon	9.2

¹Brookfield RVF #1 at 50 rpm

²Method CCP-22-TAS-TM-500.7, insulated test tube in 23°C water bath, 2.0% MEKP-925H



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Physical Properties

The physical properties of Stypol®RSP15021 are shown below. Properties are shown for both neat resins casting and for an infused glass fiber reinforced laminate. These are typical values and are provided for reference only. Note: The physical properties of thermoset resins evolve as the resin cures. The properties given below are for well cured castings and laminates. Resin and laminates at different stages of cure will have varying properties.

Test	Test Method	Neat Resin Casting ²	Laminate ³
Tensile Strength	ASTM D638	7,500 psi	42,300 psi
Tensile Modulus		580,000 psi	2,800,000 psi
Tensile Elongation		1.6%	2.1%
Flexural Strength	ASTM D790	13,500 psi	51,600 psi
Flexural Modulus		570,000 psi	2,320,000 psi
Heat Distortion Point at 264 psi	ASTM D648	156°F (69°C)	--
Glass Content	ASTM D2584	--	68.5%

- All tests are run per CCP internal test methods. These methods are based on the ASTM methods listed.
- Neat Resin Casting – Resin initiated with 2% MEKP-925H. The casting cured for 16 hours at room temperature and post cured for 5 hours 100°C.
- Laminate - 5 plies of 2.0 oz CSM infused with RSPI-5021. The panel was post cured for 5 hours at 100°C.
- Reference UP-08-6654.

Application

The cure rate of polyester resins depends on a number of factors including the product’s age, temperature, catalyst type, catalyst level and ambient humidity. When used in a closed molding application the laminate cure rate also depends on reinforcement content and laminate thickness as well as other factors. For these reasons, we recommend that customer’s check the cure rate in your plant.

Stypol®RSP15021 is quality control tested using Syrgis NOROX® MEKP-925H. Arkema Luperox® DHD-9, NOROX® MEKP-925, and Chemtura HP-90 are expected to yield similar performance. Arkema Luperox® DDM-9 catalyst, NOROX® MEKP-9 and NOROX® MEKP-9H, Akzo Nobel CADOX L-50a and CADOX D-50 may also be used but gel and cure times may vary. The catalyst level should not exceed 2.4% or fall below 0.9% for proper cure. A catalyst level of 1.25% at 77°F is considered ideal. This product should not be used when temperature conditions are below 60°F, as curing may be adversely affected.



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Caution

Do not add any material other than the recommended methyl ethyl ketone peroxide to this product without the advice of a representative of CCP Composites US.

Storage

Uncatalyzed, standard cure polyester products have a usage life of three months from date of shipment from CCP when stored at 73°F or below in a closed, factory-sealed, opaque container, and out of direct sunlight. The usage life is cut in half for every 20°F over 73°F.



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COMPOSITES SAFETY INFORMATION (October 2011)

All sales of products manufactured by CCP Composites US (CCP), and described herein, are made solely on condition that CCP's customers comply with applicable health and safety laws, regulations and orders relating to the handling of our products in the workplace. Before using, read the following information, and both the product label, and Material Safety Data Sheet pertaining to each product.

Most products contain styrene. Styrene can cause eye, skin and respiratory tract irritation. Avoid contact with eyes, skin and clothing. Impermeable gloves, safety eyewear and protective clothing should be worn during use to avoid skin and eye contact. Wash thoroughly after use.

Styrene is a solvent and may be harmful if inhaled. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Extended exposure to styrene at concentrations above the recommended exposure limits may cause central nervous system depression causing dizziness, headaches or nausea and, if overexposure is continued indefinitely, loss of consciousness, liver and kidney damage.

Do not ingest or breathe vapor, spray mists or dusts caused by applying, sanding, grinding and sawing products. Wear an appropriate NIOSH/MSHA approved and properly fitted respirator during application and use of these products until vapors, mists and dusts are exhausted, unless air monitoring demonstrates vapors, mists and dusts are below applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

The International Agency for Research on Cancer (IARC) reclassified styrene as Group 2B, "possibly carcinogenic to humans." This revised classification was not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and published the following statement: Recently published studies tracing 50,000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among all workers), and no increase in mortality related to styrene.

Styrene is classified by OSHA and the Department of Transportation as a flammable liquid. Flammable products should be kept away from heat, sparks, and flame. Lighting and other electrical systems in the work place should be vapor-proof and protected from breakage.

Vapors from styrene may cause flash fire. Styrene vapors are heavier than air and may concentrate in the lower levels of molds and the work area. General clean air dilution or local exhaust ventilation should be provided in volume and pattern to keep vapors well below the lower explosion limit and all air contaminants (vapor, mists and dusts) below the current permissible exposure limits in the mixing, application, curing and repair areas.

Some products may contain additional hazardous ingredients. To determine the hazardous ingredients present, their applicable exposure limits and other safety information, read the Material Safety Data Sheet for each product (identified by product number) before using. If unavailable, these can be obtained, free of charge, from your CCP representative or from: CCP Composites US, P.O. Box 419389, Kansas City, MO 64141-6389; 816-391-6053.

FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapors or spray mist, remove to fresh air. If swallowed, get medical attention.

Those products have at least two components that must be mixed before use. Any mixture of components will have hazards of all components. Before opening the packages read all warning labels. Observe all precautions.

Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations. Emptied containers may retain hazardous residue. Do not cut, puncture or weld on or near these containers. Follow container label warnings until containers are thoroughly cleaned or destroyed.

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