

STYPOL[®]

RLPS-1401

Low Exotherm RTM Resin

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Type

STYPOL[®] RLPS-1401 is a lower exotherm RTM (resin transfer molding) resin. This resin is composed of a blend of orthophthalic resins for strength and toughness and DCPD resin for high heat distortion characteristics and excellent surface cosmetics.

Uses

STYPOL[®] RLPS-1401 is used for infusion and small part applications.

Distinguishing Characteristics

STYPOL[®] RLPS-1401 offers the following features:

- Based on CCP's well-established LLP series of resins
- Blend of orthophthalic resins for strength and toughness, and DCPD resin for high heat distortion characteristics and excellent gel coat surface cosmetics
- Medium viscosity for good fiber wetting and mold filling performance
- Specifically formulated with low color and readily accepts pigmentation to produce white parts.

Typical Liquid Properties (at 77°F, 25°C)

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 testing. Products with properties outside of these readings can perform acceptably. Final suitability of this product is in the end use performance.

Test	Value
Viscosity, Brookfield LVF #2 Spindle @ 30 rpm	105 cps
Weight per Gallon	9.10 lbs.



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Non-Volatile Material	62%	
	Cup Gel Test:	Laminate Gel Test:
	Azox, 1.25%--	Azox, 1.25%--
	100 Gram Mass at 77°F	30 wt % Glass Laminate, 8 oz CSM, at 77°F
Gel Time	14.0 minutes	15.5 minutes
Gel to Peak	14.0 minutes	18.0 minutes
Peak Exotherm	260°F	135°F

When using pigment pastes or gel coat for coloring, be advised that pigment separation due to resin buoyancy can occur. Gentle, continuous agitation is required during usage. Over time, the pigment will settle and lithify (petrify) into a solid cake at the bottom of the drum or tank, which can be difficult to remove or disperse.

Reactivity

Reactivity can be modified by selection of peroxide initiator. Initiator levels should range between 1 and 2.5 percent depending on temperature and process requirements.

Slowest Cure/Lowest Exotherm	Standard Cure	Faster Cure
CHP-blended MEKP catalyst	DDM-9	Acetyl acetone peroxide (AAP) such as NORAC Azox or Arkema Luperox® 224

Physical Properties

Polyester resins do not develop ultimate physicals; i.e., “cure,” right away. Time and/or heat are needed. Heat may come from internal exotherm or external sources. The amount of catalyst will influence the cure. With time and/or heat, a “moderate cure” will develop into “ultimate physicals.”

The duration for the part to reach cure depends upon time, temperature and satisfactory catalyzation. Too much or too little catalyst can result in permanent under-cure, which cannot be overcome. Practically speaking, serviceable cure time will range from overnight to a week and occasionally longer due to ambient conditions. Small, properly catalyzed, thin laminates that do not exotherm and do not receive external heat may take months or years to achieve ultimate physicals. Sufficient external heat can reduce the cure time to less than a day.



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Property	Units	Neat Resin Casting	Glass Laminate, 30 wt % CSM
Tensile Strength	psi	6,800	12,000
Tensile Modulus	psi x 10 ⁶	0.63	1.3
Tensile Elongation	%	1.1	1.4
Flexural Strength	psi	10,000	22,000
Flexural Modulus	psi x 10 ⁶	0.60	1.02
Heat Distortion Temperature	°F	185 (85°C)	n/a

Caution

Do not add any material, other than the recommended fillers and 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 90 days 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.



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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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