

# STYPOL®

## 040-4331, 040-4332 & 040-4334 Isophthalic laminating resins

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### Type

STYPOL® 040-4331, 040-4332, and 040-4334 are isophthalic laminating resins. They are pre-promoted, thixotropic, isophthalic polyester resins containing styrene monomer. They differ in gel time, ranging from 18 to 27 minutes.

### Uses

STYPOL® 040-4331, 040-4332 and 040-4334 are especially formulated for hand lay-up or spray-up for high heat resistance and/or corrosion resistant applications.

### Distinguishing Characteristics

STYPOL® 040-4331, 040-4332, and 040-4334 offer the following features:

- Outstanding chemical resistance
- High impact resistance
- Good heat resistance

### Typical liquid properties (at 77°F)

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 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 @ 60 rpm	400 cps
Weight per Gallon	9.1 lbs
Specific Gravity	1.092
Thixotropic Index	2.9



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Uncatalyzed Life	3 months
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Test	Value	040-4331	040-4332	040-4334
Gel time at 77°F (25°C) 1.25% DDM-9H 100 Gram Mass	400 cps	27 minutes	23 minutes	18 minutes
Laminate		34 minutes	27 minutes	23 minutes

**Cured Resin**

Test	Value
Barcol Hardness	48
Heat Distortion at 264 psi Postcured at 120°C Postcured at 70°C	207°F (97°C) 189°F (87°C)
Specific Gravity, 25°/25°C (77°/77°F)	1.18
Tensile Strength	8,900 psi
Flexural Strength	17,800 psi
Flexural Modulus	0.54 x 10 <sup>6</sup> psi

**Laminate Physical Properties**

Test	Value
1st Barcol	2.5 hours
Barcol Hardness	50
Specific Gravity, 25°/25°C (77°/77°F)	1.37
Tensile Strength	13,800 - 18,000 psi
Tensile Modulus	1.0 - 1.3 x 10 <sup>6</sup> psi
Tensile Elongation	1.7 - 2.0%



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Flexural Strength	18,000 - 27,600 psi
Flexural Modulus	0.8 - 1.0 x 10 <sup>6</sup> psi
Water Absorption, 24 hours, 77°F	0.1%
Glass Content	25 - 35%

### Cure

Proper catalyzation is very important in constructing molds.

These products are quality controlled with the ideal catalyst level of 1.25% DDM-9H at 77°F. The acceptable catalyst range is 0.9% (when used at temperatures above 80°F) to 2.0% (when used at temperatures as low as 70°F). Catalyst levels outside this range can result in poor cure.

It is recommended that gel time be checked in the customer's plant, as age, temperature, humidity and catalyst will produce varied gel times.

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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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