



# STYPOL<sup>®</sup>

## 040-8006 and 040-8084 Polyester Closed Molding Resins

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### Uses

STYPOL<sup>®</sup> 040-8006 and 040-8084 are pre-promoted unsaturated polyester resins containing styrene monomer. They are formulated especially for fabrication of reinforced plastic parts, using the RTM (Resin Transfer Molding) process. It may be used as is, or with a filler.

### Features and Benefits

- Fast wet-out
- Early development of Barcol Hardness
- Good cure in thin sections
- Excellent retention of physicals after water boil

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

These values may or may not be manufacturing control criteria. They are listed as 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	STYPOL <sup>®</sup> 040-8006	STYPOL <sup>®</sup> 040-8084
Viscosity	105 cps <sup>(1)</sup>	90 cps <sup>(2)</sup>
Gel Time <sup>(3)</sup>	7 minutes	30 min
Weight per Gallon	9.0 lbs	9.0 lbs

<sup>(1)</sup>Brookfield LVF #2 @ 30 rpm

<sup>(2)</sup>Brookfield LVF #2 @ 60 rpm

<sup>(3)</sup>100 g mass, 1.25% Arkema Luperox<sup>®</sup> DDM-9



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**Physical Properties**

The physical properties of STYPOL® 040-8006 and 040-8084 are shown below. Properties are shown for both neat resin castings and for glass fiber reinforced laminates. These are typical values and are provided for reference only. The physical properties of thermoset resins evolve as the resin cures. The properties given below are for well cured castings and laminates. Resins and laminates at different stages of curing will have varying properties.

Test	Test Method <sup>(1)</sup>	Neat Resin Casting <sup>(2)</sup>	Laminate <sup>(3)</sup>
Tensile Strength	ASTM D638	6,900 psi	12,800 psi
Tensile Modulus	ASTM D638	520,000 psi	910,000 psi
Tensile Elongation	ASTM D638	1.4%	1.3%
Flexural Strength	ASTM D790	12,800 psi	23,000 psi
Flexural Modulus	ASTM D790	550,000 psi	1,020,000 psi
Flexural Strength after 2 h water boil	ASTM D790	N/A	21,850 psi, 95% retention
Impact (Un-notched)	ASTM D256	2.3 ft.-lbs.	14.3 ft.-lbs.
Barcol Hardness, Model #934	ASTM D2583	47	48
Heat Distortion Point at 264 psi	ASTM D648	156°F (69°C)	N/A

<sup>(1)</sup>All tests run per internal CCP test methods. These methods are similar to the ASTM methods listed above

<sup>(2)</sup>Neat resin casting catalyzed with 1.0% benzoyl peroxide. Casting was cured at 180°F (82.2°C) and post cured for 1 hr at 240°F (115.5°C)

<sup>(3)</sup>Laminate - Resin initiated with Arkema Luperox

**Application**

STYPOL® 040-8006 and 040-8084 are formulated with low viscosities for thorough wet-out of reinforcing materials and rapid fill-times. In order to fully realize the benefits of their low viscosities, temperature control is recommended. Resin viscosity is affected by temperature. At cooler temperatures, the resin viscosity is higher, and at warmer temperatures, the viscosity is lower. An example of the affect of temperature on viscosity is represented below.



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**STYPOL® 040-8006 (80%), Q-325 (20%)**

Temperature	60°F	70°F	80°F	90°F
Filled <sup>(1)</sup> Viscosity <sup>(2)</sup>	345 cps	275 cps	195 cps	145 cps

<sup>(1)</sup>Filled system was 80% STYPOL® 040-8006 and 20% Huber Engineered Materials Hubercarb™ Q-325 20%

<sup>(2)</sup>Brookfield LVF #2 spindle @ 30 rpm

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 laminating application the laminate cure rate also depends on reinforcement content and laminate thickness as well as other factors. For these reasons, we recommend that customers check the cure rate in your plant.

STYPOL® 040-8006 and 040-8084 are tested using Arkema Luperox® DDM-9. Syrgis NOROX® MEKP-9 and AKZO CADOX D-50 are expected to yield similar performances. Other MEKP peroxides such as Arkema Luperox® DHD-9, Syrgis NOROX® MEKP-9H, MEKP-925 and NOROX® MEKP-925H, Akzo Nobel CADOX L-50a and Pergan HP-90 may also be used, but gel times will vary.

The catalyst level should not exceed 2.4% or fall below 0.9% for proper cure. The recommended range is 0.9% to 2.4% with 1.25% at 77°F (25°C) being ideal.

This product should not be used when temperature conditions are below 60°F, as curing may be adversely affected.

**Caution**

Do not add any material, other than the recommended fillers and methyl ethyl ketone peroxide, to this product without the advice of a CCP Composites representative. See the product data sheet at [CCP Composites](#) and [MSDS](#) information online.

**Storage Limitations**

Un-catalyzed standard cure polyester products have a usage life of 90 days from date of shipment when stored at 73°F or below, in a closed, factory-sealed, opaque container, and out of direct sunlight.