

# STYPOL®

## 040-5739 and 040-5845 Marble Resins

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### Type

STYPOL® 040-5739 and 040-5845 are pre-promoted, low shrink, resilient resins, containing styrene monomer. They are especially designed for cultured marble casting applications.

### Uses

**STYPOL® 040-5739 and 040-5845** have exhibited their versatility in helping meet the thermal shock test requirements on finished parts. (See Property and Performance Standard ANSI Z124.3 as issued by the International Cast Polymer Association.) Note: Many factors other than resin influence the outcome of the ANSI Z124.3C Thermal Shock Test. Manufacturers should verify the performance of parts made using their specific processing conditions.

### Distinguishing Characteristics

STYPOL® 040-5739 and 040-5845 offer the following features:

- Low exotherm
- Excellent suspension of fillers
- Resistance to warping and cracking
- Minimal gel time drift

### Typical Liquid Properties (at 77°F)

Liquid properties of **STYPOL® 040-5739 and 040-5845** 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 testing. Products with properties outside of these readings can perform acceptably. Final suitability of this product is in the end use performance.

Test	040-5739	040-5845
Non-Volatile Material	69%	69%



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Viscosity <sup>1</sup>	2300 cps	2300 cps
Gel Time <sup>2</sup>	13 minutes	20 minutes
Weight per Gallon	9.4 lbs.	9.4 lbs.

<sup>1</sup>Brookfield LVF #3 Spindle @ 12 rpm  
<sup>2</sup>1% AKZO Cadox<sup>®</sup> M-50a in 100 gm mass

**Physical Properties**

The physical properties of **STYPOL<sup>®</sup> 040-5739 and 040-5845** are shown below. Properties are shown for a neat resin casting. 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 <sup>1</sup>	Neat Resin Casting
Tensile Strength	ASTM D638	8,000 psi
Tensile Elongation	N/A	1.8%
Flexural Strength	ASTM D790	11,500 psi
Flexural Modulus	N/A	620,000 psi
Heat Distortion at 264 psi	ASTM D648	68°C
Barcol Hardness	ASTM D2583	42

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

**Application**

A typical formulation for **STYPOL<sup>®</sup> 040-5739 and 040-5845** is shown below. This formulation is provided for reference only, each manufacturer will customize the formulation to fit his specific processing conditions.

**Suggested Formations**

Resin	23-25 parts by wt
Calcium Carbonate <sup>1</sup>	25-27 parts by wt
Calcium Carbonate <sup>2</sup>	50 parts by wt
AKZO M-50a	1.0% based on resin

<sup>1</sup>Similar to #15 M, Georgia Marble Company.  
<sup>2</sup>Similar to 40-200, Georgia Marble Company.

Test	Value
Room Temperature	75° - 80°F

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Mix Temperature	80°F
Gel Time <sup>1</sup>	15 - 19 minutes (25-30)
De-Mold Time	90 minutes
Peak Exotherm	125° - 140°F

<sup>1</sup>Catalyze resin, mix in one minute. Then add filler and mix 2 minutes.

## Curing

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 marble casting application the matrix cure rate also depends on filler content and casting thickness as well as other factors. For these reasons, we recommend that customer's check the cure rate in your plant.

**STYPOL® 040-5739 and 040-5845** are quality control tested using AKZO Cadox® M50a. Norac MEKP-900, Arkema Luperox® Delta X-9, and Chemtura Quickset Super are expected to yield similar performance.

For proper, cure the catalyst level should not exceed 3.0% or fall below 0.5% based on resin content. Recommended range at 77°F is 1.0% based on resin. 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 recommended fillers, pigment 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 manufacture 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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