

STYPOL[®]

040-6100 and 040-6108 Polymer Concrete Resin

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Type

STYPOL[®] 040-6100 and 040-6108 are pre-promoted unsaturated polyester resins containing styrene monomer. They are designed for use in making polymer concrete products.

Distinguishing Characteristics

STYPOL[®] 040-6100 and 040-6108 offers the following features:

- Very low viscosity
- Superior wet-out capabilities allowing high filler loading
- High heat distortion

Typical liquid properties (at 77°F)

Liquid properties of **STYPOL[®] 040-6100** and **040-6108** 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. Resin properties outside of these readings can perform acceptably. Final suitability of this product is in the end use performance

Test	040-6100	040-6108
Non-Volatile Material ¹	67.5%	67.5%
Viscosity ²	67%	160 cps
Weight per Gallon	8.9 lbs	8.9 lbs
Gel Time ⁽³⁾	6.5 minutes	9 minutes
Gel to Peak Exotherm ⁽³⁾	9 minutes	10 minutes
Peak Exotherm ⁽³⁾	320°F	320°F

¹See the MSDS for regulatory information such as HAP and monomer content.

²Brookfield LVF #2 at 30 rpm



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³1.0% DDM-9 in 100 gm

Cure

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 customer’s check the cure rate in your plant.

Stypol® 040-6100 and 040-6108 are quality control tested using Arkema Luperox DDM-9. Other 9% oxygen MEKP catalysts such as Syrgis NOROX® MEKP-9 and NOROX® MEKP-9H, Akzo Nobel CADOX L-50a and CADOX D-50 are expected to yield similar performance. Arkema Luperox® DHD-9, NOROX® MEKP-925 and NOROX® MEKP-925H, and Chemtura HP-90 may also be used, but gel and cure times may vary.

The catalyst level should not exceed 2.5% or fall below 0.75% for proper cure. Recommended range is 0.75% to 2.5% with 1.25% at 77°F being ideal.

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

Physical Properties

The physical properties of Stypol® 040-6100 and 040-6108 are shown below. Properties are shown for neat resins castings. 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. Resin at different stages of cure will have varying properties.

Physical Property	Test Method	Neat Resin Casting
Tensile Strength	ASTM D638	5,698 psi
Tensile Modulus	ASTM D638	460,000 psi
Tensile Elongation	ASTM D638	1.34%
Flexural Strength	ASTM D790	12,188 psi
Flexural Modulus	ASTM D790	550,000 psi
Heat Distortion at 264 psi	ASTM D648	151°F (66 °F)

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

²Neat resin catalyzed with 1.0% Arkema Luperox DDM-9. The casting was allowed to cure at room temperature for approximately 16 hours and post cured for 4 hours at 150°F.



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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 Limitations

Uncatalyzed, standard cure polyester products have a usage life of 90 days from the 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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Without limiting the generality of the foregoing, if any product fails to meet warranties mentioned above, Seller shall at Seller's option either replace the nonconforming product at no cost to Buyer or refund the Buyer the purchase price thereof. The foregoing is Buyer's sole and exclusive remedy for failure of Seller to deliver or supply product that meets the foregoing warranties. Seller's liability with respect to this contract and the product purchased under it shall not exceed the purchase price of the portion of such product as to which such liability arises. Seller shall not be liable for any injury, loss or damage, resulting from the handling or use of the product shipped hereunder whether in the manufacturing process or otherwise. In no event shall Seller be liable for special, incidental or consequential damages, including without limitations loss of profits, capital or business opportunity, downtime costs, or claims of customers or employees of Buyer. Failure to give Seller notice of any claim within thirty (30) days of shipment of the product concerned shall constitute a waiver of such claim by Buyer. Any product credit received by Buyer hereunder, if not used, shall automatically expire one (1) year from the date the credit was granted. Notwithstanding any applicable statute of limitations to the contrary, any action by Buyer relation to a claim hereunder must be instituted no later than two (2) years after the occurrence of the event upon which the claim is based. All the foregoing limitations shall apply irrespective of whether Buyer's claim is based upon breach of contract, breach of warranty, negligence, strict liability, or any other legal theory.

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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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