



## Pultrusion Product Line Guide

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Polynt Composites offers a full line of resins and support products to meet the needs of the Pultrusion Industry. Products in this guide are Polynt's recommended products for pultrusion. Custom product development is available for specialty applications. Consult your Account Manager for more information.

### 1. Pultrusion Resins

The viscosity and SPI gel times (below) are not manufacturing control criteria and are listed for reference only. Particular batches will not conform exactly to the numbers listed because storage conditions, temperature changes, age, testing equipment (type and procedures) can each have a significant effect on test results. Products with properties outside of these values can perform acceptably. Final suitability of the product is in the end performance.

CODE	VISCOSITY <sup>(1)</sup>	SPI REACTIVITY <sup>(2)</sup>			COMMENTS
		GEL TIME	TIME TO PEAK EXO.	PEAK EXO.	
<b>STYPOL® Unsaturated Polyester Resins</b>					
040-2304	2950 cps <i>LVF #2 @ 6 rpm</i>	6 min.	8 min.	400°F	Isophthalic Polyester Resin – Medium reactivity, flexible, high viscosity
040-2988	2650 cps <i>LVF #2 @ 6 rpm</i>	5 min.	6 min.	400°F	Isophthalic Polyester Resin – Medium reactivity, rigid, chemical resistant, high viscosity
040-9322	2400 cps <i>LVF #3 @ 30 rpm</i>	4 min.	5 min.	435°F	Isophthalic Polyester Resin – Medium to high reactivity, flexible, high viscosity
040-9341	1450 cps <i>LVF #3 @ 30 rpm</i>	4 min.	5 min.	435°F	Isophthalic Polyester Resin – Medium to high reactivity, flexible, medium viscosity
040-9531	2650 cps <i>LVF #3 @ 12 rpm</i>	4 min.	5 min.	380°F	Orthophthalic Polyester Resin – Medium reactivity, flexible
<b>FireBlock™ Resin</b>					
P81091TF	Avail. on request	Un-promoted			Intumescent fire-retardant resin for use in the pultrusion application
<b>XYCON® Hybrid Resins</b>					
047-1040	350 cps <i>LVF #2 @ 30 rpm</i>	12 min	14 min.	380°F	Modified Thermosetting Acrylic Resin for use with Stypol® 040-7263; together they form a tough, heat and water resistant polymer
<b>EPOVIA® Vinyl Ester Resins</b>					
RF-1001 DMV	400 cps <i>LVF #3 @ 60 rpm</i>	<i>Not available</i>			Bisphenol-A Vinyl Ester Resin – Excellent physical properties, heat and chemical resistant
RF 1051	400 cps <i>LVF #3 @ 60 rpm</i>	<i>Not available</i>			Novolac Epoxy Vinyl Ester Resin – Excellent physical properties, exceptional heat and chemical resistance
RF 2000 SE	400 cps <i>LVF #3 @ 60 rpm</i>	<i>Not available</i>			Brominated Bisphenol-A Vinyl Ester Resin – Flame-retardant and chemical resistant
RF 3200	500 cps <i>LVF #3 @ 60 rpm</i>	<i>Not available</i>			Elastomer Modified Epoxy Based Vinyl Ester Resin – High elongation

<sup>(1)</sup> Viscosity tests run using a Brookfield viscometer at 77°F (25°C)

<sup>(2)</sup> Gel time tests run per the SPI method (180°F, 1.0% BPO)



## 2. Shrinkage Control Additives

Some pultrusion applications require the use of shrinkage control additives. These additives reduce shrinkage and improve surface cosmetics.

STYPOL® CODE	CODE	COMMENTS
STYPOL®	ACPW4000	Crystalline polystyrene in styrene (NVM – 40 %, viscosity – 8000 cps)
STYPOL®	APVJ4001	Polyvinyl acetate in styrene (NVM – 40%, viscosity - 1800 cps)

## 3. Cleaners

Polynt Composites offers water-based and solvent-based cleaning products suitable for use in the closed molding industry. These products are part of Polynt's THERMACLEAN® Industrial Cleaners product line.

STYPOL® CODE	CODE	COMMENTS
THERMACLEAN® POWDER	095-0042	Polynt's strongest water-based cleaning compound formulated for breaking down buildup on floors; can also be diluted further with water and used as a tool and equipment cleaner to clean liquid and cured resins
UNISOLVE™ EX	095-0102	Solvent-based resin cleaner for use on tools and equipment; includes anti-gelling chemistry for increased resin loading capacity

Additional information for specific products, including SDS and technical data sheets, can be obtained by contacting your Polynt representative or Polynt Customer Service at 800-322-8103.

## POLYNT SAFETY INFORMATION

All sales of products manufactured by Polynt Composites USA Inc. and described herein, are made solely on condition that Polynt Composites USA 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 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 12th Report on Carcinogens issued by the National Toxicology Program lists styrene as a "reasonably anticipated" carcinogen, but the Report cautions that the NTP listing does not mean that styrene presents a risk to persons in their daily lives. The Styrene Information and Research Center does not agree with the classification as it did not include a review of all available data. SIRC states: "HHS included styrene in the 12th RoC despite the fact that European Union regulators have determined styrene does not represent a human cancer concern. E.U. scientists reviewed the full styrene database, weighing all of the available data in reaching their conclusion."

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 workplace 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 Safety Data Sheet for each product (identified by product number) before using. If unavailable, these can be obtained, free of charge, from your Polynt Composites USA representative or from: Polynt Composites USA Inc., 99 East Cottage Avenue, Carpentersville, IL 60110, 800-322-8103.

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.

**FOR INDUSTRIAL USE AND PROFESSIONAL APPLICATION ONLY. KEEP OUT OF REACH OF CHILDREN.**

## LIMITED WARRANTY AND LIMITATION OF LIABILITY

### LIMITED WARRANTY.

Seller warrants that: (i) Buyer shall obtain good title to the product sold hereunder, (ii) at shipment such product shall conform to Seller's specifications for the product; and (iii) the sale or use of such product will not infringe the claims of any U.S. patent covering the product itself, but Seller does not warrant against infringement which might arise by the use of said product in any combination with other products or arising in the operation of any process. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO SELLER. ANY ADDITIONAL REPRESENTATIONS OR SUGGESTIONS REGARDING THE PRODUCT OR ITS POSSIBLE USES ARE BASED UPON SELLER'S GOOD FAITH OPINION AND BELIEF, BUT ARE NOT TO BE CONSTRUED AS AFFIRMATIONS OF FACT, PROMISES, OR DESCRIPTIONS, AND SHALL IN NO WAY BE DEEMED PART OF THE SALE OF PRODUCT.** In particular, and without limiting the foregoing, because of environmental and use conditions beyond Seller's control, Seller offers no warranty and makes no promise concerning the results that may be obtained by the Buyer (or the Buyer's customer) with the product or the performance of the product. Each user should satisfy itself, by adequate testing, of the suitability of the product for its particular application.

### LIMITATION OF LIABILITY.

- (a) Seller's total liability for any claim arising out of or in connection with this contract, including for breach of contract, warranty, statutory duty, or for other tort, including seller's negligence, shall not exceed the purchase price 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 LIMITATION LOSS OF PROFITS, CAPITAL OR BUSINESS OPPORTUNITY, DOWNTIME COSTS, OR CLAIMS OF CUSTOMERS OR EMPLOYEES OF BUYER, WHETHER IN AN ACTION UNDER CONTRACT, NEGLIGENCE OR ANY OTHER THEORY, ARISING OUT OF OR IN CONNECTION WITH THIS CONTRACT, OR THE USE, INABILITY TO USE, OR PERFORMANCE OF THE PRODUCT.**
- (b) If Seller furnishes technical or other advice to Buyer, whether or not at Buyer's request, with respect to processing, further manufacture, other use or resale of the products, Seller shall not be liable for, and Buyer assumes all risk of, such advice and the results thereof.

The information provided is believed to be accurate at the time of preparation, or prepared from sources believed to be reliable, but it is the responsibility of user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use.