PRODUCT BULLETIN

May 2025

OptiPLUS® 040-8077, 040-8089, 040-8094

High-Performance Shrinkage-Controlled Tooling Resin

DESCRIPTION

*Opti*PLUS® 040-8077, 040-8089 and 040-8094 are high-performance tooling resins. Specifically, they are shrink-controlled resins modified by low-profile additives designed specifically for ambient temperature molding or tool manufacturing. These products result in dramatically improved surfaces with minimal shrinkage.

*Opti*PLUS® tooling resins are used to build molds for marine, automotive, RV, medical, and truck equipment parts that are produced by the spraying and hand storage processes. They are also used as replacements for isophthalic resins, vinyl esters, and epoxy in tooling applications for casting and high temperature thermoforming of thermoplastic sheets, such as acrylic, polycarbonate and ABS.

*Opti*PLUS® 040-8077, 040-8089 and 040-8094 pre-promoted and pre-thixed tooling resins, without additives other than peroxide initiator (catalyst) for curing. They are transparent amber liquid during application that remains clear during fiber moisture. Upon cure, the laminate will turn creamy white as an initial visual indicator of proper cure.

*Opti*PLUS® 040-8089 and 040-8094 comply with the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for the production of reinforced plastic composites and shipbuilding.

*Opti*PLUS® 040-8094 is the summer version (longer gel time version) of *Opti*PLUS® 040-8089.

BENEFITS & FEATURES

- Surface and dimensional control for near-perfect mold or master replication
- Excellent heat resistance
- Superior laminated mechanical properties
- Formulated for ease of use and excellent for wetting fibers
- Quick, stress-free, laminate build-up, even at 0.250” thick (wet-on-wet) (040-8089 and 040-8094) or 0.500” thick (wet-on-wet) or more (040-8077)
- Longer life due good shrinkage control

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PROPERTIES – LIQUID

Property[1]	Unit	040-8077	040-8089	040-8094
Viscosity[2]	cps	750	1025	1025
Viscosity [3]	cps	250	350	350
Thix Index	-	2.7 (Min.)	2.9 (Min.)	2.7 (Min.)
Gel Time[4]	minutes	15	15	24
Gel to Peak	minutes	5.5	5.0	-
Peak Exotherm	°C/°F	-	-	188/370
Solids Content (Max.)	%	50	50	50.5
Weight per Gallon	lbs/gal	8.8	8.8	8.8
Non-PAH Monomers and Solvents	%	-	< 10	< 10

1) All properties at 25°C/77°F unless otherwise noted
2) Brookfield Viscometer RV Spindle #3 at 5 RPM
3) Brookfield Viscometer RV Spindle #3 at 50 RPM
4) 50 g mass, 1.50% United Initiator's Norox® MEKP-9

PROPERTIES – PHYSICAL

Property[1]	Unit	Laminate[2]	Test Method
Tensile Strength	psi	18,000	ASTM D 638
Tensile Modulus	psi	1,040,000	ASTM D 638
Tensile Elongation	%	2.3	ASTM D 638
Flexure Strength	psi	30,000	ASTM D 790
Flexure Modulus	psi	875,000	ASTM D 790
Izod Impact with Notch	ft-lb/in	20.5	ASTM D 256
Izod Impact without Notch	ft-lb/in	32.0	ASTM D 256
Glass Content	%	38.0	-

1) Physical properties were determined using internal Polynt test methods that are similar to those listed above.
2) Laminate structure: four 1.5oz sheets; mat laminated with *Opti*PLUS® resin and United Initiators Norox® MEKP-9.

APPLICATION

Some fumed silica thixotropic additive separation is common and expected, due to the low viscosity and chemistry involved with *Opti*PLUS® 040-8077, 040-8089 and 040-8094. Minimum mixing of the *Opti*PLUS® tooling resin before use is sufficient to reincorporate the thixotropic additive. Use mixing equipment with sufficient power (relative to container size) to achieve thorough circulation from top to bottom and out to the sides of the container. The agitator must be sized appropriately for the container and must allow uniform mixing regardless of the level of liquid in the container. Air bubbling should not be used for mixing. It is not effective and only serves as a potential source of water or oil contamination. Do not overmix *Opti*PLUS®. Overmixing can break down the viscosity of the resin, increasing the tendency to sink.

The *Opti*PLUS® product line is formulated for use at 75-95 °F, with United Initiator's Norox® MEKP-9 or equivalent. Higher dimer peroxides such as Akzo Nobel Cadox® L-50a or equivalent can be used, especially if longer gel times are needed at warmer temperatures for additional working times.

Application temperatures outside of 75-95 °F are not suggested. Temperatures below 75 °F will cause cure without shrinkage control. Temperatures above 95 °F will generate excessive heat that will cause poor cure, poor shrinkage control, and can cause mold damage. For processes running above 95 °F, contact a Polynt technical service representative for alternative *Opti*PLUS® high temperature products.

Secondary bonding characteristics are excellent with *Opti*PLUS® products but should be tested if secondary bonding is done after three or more days of original lamination or in very hot conditions.

See the current OptiPLUS® Application Guide for more application details and usage tips.

Refer to Polynt's Composites Applications Guide ("Cookbook") for equipment and application recommendations. Each user must determine the suitability of this product to his/her particular mode of operation and intended end-use application. A Polynt representative will be available to assist in the proper selection of all Polynt products available for commercial use.

SHELF LIFE & STORAGE

The shelf life of *Opti*PLUS® 040-8077, 040-8089, 040-8094 is 120 days from the date of manufacture from Polynt. To maximize usage life and maintain optimum properties, resins and gel coats should be stored in the original closed container at temperatures below 23°C/73°F and away from ignition sources and sunlight. Keep containers sealed to prevent moisture pick-up and monomer loss.

RELATED LITERATURE

- 040-8077, 040-8089 and 040-8094 Resin Tooling Application Guide
- MB-358 *Opti*PLUS® Repair

SAFETY & WARRANTY

To receive a copy of our safety and warranty information, please email safetyandwarranty@polynt.com.