PRODUCT BULLETIN

January 2021

STYPOL® 040-8086, 040-8123

Moderate Production Rate RTM and Light RTM Resins

DESCRIPTION

STYPOL® 040-8086 and 040-8123 are pre-promoted, unsaturated polyester laminating resins containing styrene monomer. They are primarily formulated for building reinforced plastic parts using closed molding processes. STYPOL® 040-8086 and 040-8123 are specifically formulated for use in moderately rapid production rate RTM or light RTM processes.

BENEFITS & FEATURES

- Low shrink resins with good surface cosmetics and resistance to fiberglass pattern print-through
- Minimal polystyrene/release agent residue buildup on the mold
- High heat distortion temperature
- Low exotherm temperature for moderate thicknesses
- Moderate production rates can be used with various catalysts to allow optimization of cycle times
- FMVSS 302 Flammability of Interior Materials – Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Busses

PROPERTIES – LIQUID

Property[1]	Unit	040-8086	040-8123
Viscosity[2]	cps	90	100
Gel Time[3]	minutes	20	32
Gel to Peak	minutes	11	13
Peak Exotherm	°C/°F	156/313	149/300
Gel Time, Laminate[4]	minutes	20	-
Gel to Peak, Laminate	minutes	11	-
Peak Exotherm, Laminate	°C/°F	74/165	71/160
Laminate First Barcol	hours	0.8 (Max.)	1.5 (Max.)
Laminate 20 Barcol	hours	1 (Max.)	2 (Max.)
Water Content	%	0.14 (Max.)	0.14 (Max.)

1) All properties at 25°C/77°F unless otherwise noted
2) Brookfield Viscometer LV Spindle #2 at 60 RPM
3) 1.25% NOROX® Azox
4) NOROX® Azox 1.25%, 2 plies 2 oz. mat, 30% glass

PROPERTIES – PHYSICAL

Property[1]	Unit	Neat Resin Casting[2]	Laminate[3]	Test Method
Tensile Strength	psi	9,000	12,000	ASTM D 638
Tensile Modulus	psi	580,000	1,300,000	ASTM D 638
Tensile Elongation	%	1.8	1.4	ASTM D 638
Flexure Strength	psi	16,000	22,000	ASTM D 790
Flexure Modulus	psi	590,000	1,020,000	ASTM D 790
Heat Distortion Temperature @ 264 psi	°C/°F	85/185	N/A	ASTM D 648
Hardness, Barcol Model 934-1	HB	40	45	ASTM D 2583

1) Physical properties were determined using internal Polynt test methods that are similar to those listed above.
2) Neat resin for casting was catalyzed with 1.25% NOROX® Azox. The casting was cured for 16 hours at room temperature and was post-cured for 1 hour at 187°F (86°C) and 2 hours at 248°F (120°C).
3) Laminate resin initiated with 1.25% NOROX® Azox. The laminate schedule was two plies of 2.0 oz. CSM. Glass content was 30%.

PROPERTIES - OTHER

Property	Unit	Product Code	Test Method[1]	Results
Flammability – Burn Rate	mm/min	040-8086	FMVSS 302: Flammability of Interior Materials – Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses	0[2]

[1] Laminate consisted of 040-8086 resin matrix, reinforced with 35% 1.5 oz. CSM glass, initiated by 1.25% DDM-9, room cure.
[2] Specimen did not ignite

APPLICATION

STYPOL® 040-8086 and 040-8123 are formulated specifically for Light RTM (Laminate Shell Resin Transfer Molding). They are designed for moderate rate production cycles of 60 minutes to 2 hours without gel coat, or 2 to 4 hours with gel coat. They may be used as is or with filler and/or pigment. Fillers such as calcium carbonate, calcium sulfate or alumina trihydrate (ATH) may be used from 20 to 50% by weight. Proper and allowable filler ranges are dependent upon part and mold design.

STYPOL® 040-8086 and 040-8123 are quality control tested using United Initiators NOROX® AZOX (acetyl acetone peroxide or AAP). Pergan Chemtura 240 and Arkema Luperox® 224 are expected to give equivalent results.

STYPOL® 040-8086 and 040-8123 are designed to cure with various catalyst systems. AAP type catalysts give the quickest cure. For thicker parts and /or hot weather conditions, an AAP/CHP (cumene hydroperoxide) blend such as United Initiators NOROX® 750 should be used. For a slightly longer gel and cure time, a standard MEK peroxide such as United Initiators NOROX® MEKP-9 or Arkema Luperox® DDM-9 should be used. Under hot weather conditions, a CHP blended MEKP such as United Initiators NOROX® MCP-75 should be used. Use of CHP blended catalysts for thin sections or during cool weather conditions can result in an inadequate cure at low catalyzation levels. Use of straight CHP catalyst is not recommended.

Refer to the following chart for *catalyst recommendations*. For most instances, the catalyst level should not exceed the maximum or fall below minimum recommendations, in order to ensure proper cure. The part thickness influences cure, so the following table (below) is only a guide. This product should not be used when temperature conditions are below 60°F, as curing may be adversely affected

Peroxide Type	NORAC	ARKEMA	Min (%)	Max (%)	Gel Time [1]
AAP	AZOX	224	0.8	2.3	18-22 min.
AAP/CHP Blend	750		0.9	2.4	26-30 min.
MEKP	MEKP-9		0.9	2.5	31-35 min.
MEKP		DDM-9	0.9	2.5	40-44 min.
MEKP/CHP Blend	MCP-75		1.2	2.6	50-54 min.

[1] 1.25% catalyst, 77°F

Refer to Polynt 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-Reichhold products available for commercial use.

SHELF LIFE & STORAGE

The shelf life of STYPOL® 040-8086 and 040-8123 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 PRODUCTS

STYPOL® 040-8085 is a faster curing version of STYPOL® 040-8086.

SAFETY & WARRANTY

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