PRODUCT BULLETIN

March 2021

STYPOL® MGP Series

General Purpose Molding Resins

DESCRIPTION

Polynt Composites' STYPOL® MGP general purpose molding resins are DCPD modified maleates designed for use in producing bulk mold compound (BMC), sheet molding compound (SMC) or wet molding pastes that will be press molded into a wide variety of parts. MGP general purpose molding resins are recommended for applications requiring good overall performance and specifically for applications requiring excellent electrical properties.

BENEFITS & FEATURES

- Good overall performance
- Excellent electrical properties
- Good pigmentation
- High gloss
- Low shrinkage
- Rapid thickening

PROPERTIES – LIQUID

Values for Viscosity Classifications

Viscosity Grade	STYPOL® MGP-E	STYPOL® MGP-T
Nominal Viscosity (1)	1050 cps	3200 cps
Nonvolatile Matter (2)	64%	67%
Acid Value (3)	16	14
Water Content (4)	0.2% (Max.)	0.2% (Max.)

1) Viscosity test method is FCTM 400 (Brookfield LVF, 77°F, spindle and rotation speed as appropriate for expected viscosity)
2) Nonvolatile matter test method is FCTM 300.8
3) Acid value test method is FCTM 100
4) Water content test method is FCTM 103.5

Values for Gel Time Classifications

Gel Time Grade	05	07
Gel Time (1)	5 minutes	7 minutes
Gel to Peak Exotherm	1.5 minutes	1.5 minutes
Peak Exotherm	420 °F	400 °F

1) Gel properties per FCTM 500, SPI Gel Time, 1% BPO catalyst, 180°F water bath

APPLICATION

A. Pigmented Zero Shrink General Purpose BMC Formula

Pigmented Zero Shrink General Purpose BMC Formula			
Component	**Description**	**Parts**	**Weight%**
STYPOL® MGP-E-0500	Molding resin	70	16.08
STYPOL® ACP-W-4000	Low shrink additive	30	6.89
BYK® -W 972 (1)	Dispersing additive	1.0	0.23
Luperox® P (2)	t-Butyl Perbenzoate catalyst	1.5	0.34
Parabenzoquinone (pBQ)	Cure inhibitor	0.03	0.01
Calcium Stearate	Internal mold release	7.0	1.61
Mogul® L (3)	Carbon black pigment	1.5	0.34
Camel-Fil® (4)	Calcium carbonate filler	260	59.73
Vetrotex 919-A4 (5) (1/2 inch)	Chopped roving fiberglass	65.3	15.00

1) BYK®-W 972 is a product of BYK Additives & Instruments
2) Luperox® P is a product of Arkema
3) Mogul® L is a product of Cabot Corporation
4) Camel-Fil® is a product of IMERYS
5) Vetrotex 919-A4 is a product of Vetrotex America

The following data represents typical values for the formula listed above. These values were obtained from panels molded at 300°F and 960 psi for three minutes. Panel thickness was approximately 0.125 inch. Actual customer results may vary.

Molded Panel Data			
Data Type	**Test Description**	**Value**	**Test Method**
Physical Properties	Tensile Strength	4,100 psi	ASTM D 638
	Tensile Modulus	1,710,000 psi	
	Elongation	0.50%	
	Flexural Strength	11,000 psi	ASTM D 790
	Flexural Modulus	1,700,000 psi	
	Notched Impact	6.9	ASTM D 256
	Unnotched Impact	8.1	
	Glass Content	14.0%	ASTM D 2584
Shrinkage	Linear Shrinkage	0.1 mils/inch	FCTM 3010

B. Non-Pigmented Cosmetic BMC Formula

Non-Pigmented Cosmetic BMC Formula			
Component	**Description**	**Parts**	**Weight%**
STYPOL® MGP-E-0500	Molding resin	60	13.69
STYPOL® ASP-B-5000	Low profile additive	40	9.13
Luperox® P (1)	t-Butyl Perbenzoate catalyst	1.5	0.34
Parabenzoquinone (pBQ)	Cure inhibitor	0.03	0.01
Calcium Stearate	Internal mold release	7.0	1.60
Sachtolith® HD-S (2)	Zinc sulfide pigment	4.0	0.91
SB 222 (3)	ATH filler	6.5	14.83
SB 432 (3)	ATH filler	6.5	14.83
Camel-Fil® (4)	Calcium carbonate filler	130	29.66
Vetrotex 919-A4 (5) (1/4 inch)	Chopped roving fiberglass	65.7	15.00

1) Luperox® P is a product of Arkema
2) Sachtolith® HD-S is a product of Sachtleben Chemie
3) SB 222 and SB 432 are products of J. M. Huber Corporation
4) Camel-Fil® is a product of IMERYS
5) Vetrotex 919-A4 is a product of Vetrotex America

The following data represents typical values for the formula listed above. These values were obtained from panels molded at 300°F and 960 psi for three minutes. Panel thickness was approximately 0.125 inch. Actual customer results may vary.

Molded Panel Data			
Data Type	**Test Description**	**Value**	**Test Method**
Physical Properties	Tensile Strength	2,400 psi	ASTM D 638
	Tensile Modulus	1,500,000 psi	
	Elongation	0.36%	
	Flexural Strength	9,500 psi	ASTM D 790
	Flexural Modulus	1,210,000 psi	
	Notched Impact	5.9	ASTM D 256
	Unnotched Impact	8.1	
	Glass Content	14.2%	ASTM D 2584

C. Pigmented General-Purpose SMC Formula

Pigmented General-Purpose SMC Formula			
Component	**Description**	**Parts**	**Weight%**
STYPOL® MGP-E-0500	Molding resin	65	20.45
STYPOL® ACP-J-3200	Low shrink additive	35	11.01
Luperox® P (1)	t-Butyl Perbenzoate catalyst	1.25	0.39
Parabenzoquinone (pBQ)	Cure initiator	0.05	0.02
BYK®-W 996 (2)	Viscosity reducer	1.4	0.44
BYK®-W 972 (2)	Dispersing additive	1.0	0.31
Butylated Hydroxy Toluene (BHT)	Shelf life extender	0.07	0.02
Zinc Stearate	Internal mold release	4.0	1.26
SB 222 (3)	ATH filler	70	22.03
SB 432 (3)	ATH filler	70	22.03
CM 2015 (4)	Black pigment	3.7	1.16
PG-9033 (5)	38% MgO dispersion	2.8	0.88
956 Fiberglass (6) (1 inch)	Continuous roving fiberglass	63.6	20.00

1) Luperox® P is a product of Arkema
2) BYK®-W 996 and BYK®-W 972 are products of BYK Additives & Instruments
3) SB 222 and SB 432 are products of J. M. Huber Corporation
4) CM 2015 is a product of Plasticolors
5) PG-9033 is a product of Plasticolors
6) 956 Fiberglass is a product of Owens Corning®

The following data represents typical values for the formula listed above. These values were measured with a Brookfield HBDV 5x Viscometer at 90°F. Actual customer results may vary.

Thickening Data (FCTM 400)		
Elapsed Time	**Spindle/Speed**	**Viscosity (cps)**
Initial	T B @ 10.0 rpm	12,800
10 Minutes	T F @ 5.0 rpm	33,600
30 Minutes	T F @ 5.0 rpm	72,000
1 Hour	T F @ 5.0 rpm	720,000
1 Day	T F @ 5.0 rpm	13,000,000
1 Week	T F @ 5.0 rpm	15,000,000
3 Weeks	T F @ 5.0 rpm	22,000,000

The following data represents typical values for the formula listed above. These values were obtained from panels molded at 300°F and 960 psi for three minutes. Panel thickness was approximately 0.125 inch. Actual customer results may vary.

Molded Panel Data			
Data Type	**Test Description**	**Value**	**Test Method**
Physical Properties	Tensile Strength	8,300 psi	ASTM D 638
	Tensile Modulus	1,370,000 psi	
	Elongation	1.7%	
	Flexural Strength	24,000 psi	ASTM D 790
	Flexural Modulus	1,080,000 psi	
	Glass Content	20.6%	ASTM D 2584
Electrical Properties	Dielectric Strength Arc Resistance	440 volts/mil 181 seconds	ASTM D 149 ASTM D 570

D. Non-Pigmented Zero Shrink General-Purpose SMC Formula

Non-Pigmented Zero Shrink General-Purpose SMC Formula			
Component	**Description**	**Parts**	**Weight%**
STYPOL® MGP-E-0500	Molding resin	60	17.44
STYPOL® 040-0168	Low profile additive	40	11.63
Styrene	Monomer	3	0.87
Luperox® P (1)	t-Butyl Perbenzoate catalyst	1.35	0.39
Parabenzoquinone (pBQ)	Cure inhibitor	0.03	0.01
BYK®-W 996 (2)	Viscosity reducer	2.0	0.58
Zinc Stearate	Internal mold release	4.0	1.16
Sachtolith® HD-S (3)	Zinc sulfide pigment	4.0	1.16
SB 222 (4)	ATH filler	80	23.25
SB 432 (4)	ATH filler	80	23.25
PG-9033 (5)	38% MgO dispersion	0.9	0.26
936 Fiberglass (6) (1 inch)	Continuous roving fiberglass	68.8	20.00

1) Luperox® P is a product of Arkema
2) BYK®-W 996 is a product of BYK Additives & Instruments
3) Sachtolith® HD-S is a product of Sachtleben Chemie
4) SB 222 and SB 432 are products of J. M. Huber Corporation
5) PG-9033 is a product of Plasticolors
6) 936 Fiberglass is a product of Owens Corning®

The following data represents typical values for the formula listed above. These values were obtained using FCTM 400. Actual customer results may vary.

Thickening Data (FCTM 400)		
Elapsed Time	**Spindle/Speed**	**Viscosity (cps)**
Initial	T B @ 10.0 rpm	12,800
10 Minutes	T F @ 5.0 rpm	51,200
30 Minutes	T F @ 5.0 rpm	360,000
1 Hour	T F @ 5.0 rpm	2,600,000
2 Days	T F @ 5.0 rpm	18,000,000
1 Week	T F @ 5.0 rpm	18,000,000

The following data represents typical values for the formula listed above. These values were obtained from panels molded at 300°F and 960 psi for three minutes. Panel thickness was approximately 0.125 inch. Actual customer results may vary.

Molded Panel Data			
Data Type	**Test Description**	**Value**	**Test Method**
Physical Properties	Tensile Strength	6,700 psi	ASTM D 638
	Tensile Modulus	924,000 psi	
	Elongation	1.37%	
	Flexural Strength	19,500 psi	ASTM D 790
	Flexural Modulus	1,140,000 psi	
	Glass Content	22.0%	ASTM D 2584
Electrical Properties	Dielectric Strength	440 volts/mil	ASTM D 149
	Arc Resistance	181 seconds	ASTM D 570

E. Pigmented General-Purpose Wet Molding Formula

Pigmented General-Purpose Wet Molding Formula			
Component	**Description**	**Parts**	**Weight%**
STYPOL® MGP-E-0500	Molding resin	60	23.25
STYPOL® ASP-B-5000	Low shrink additive	40	15.50
Luperox® P (1)	t-Butyl Perbenzoate catalyst	1.2	0.47
Luperox® 26 (1)	t-Butyl Peroxy-2-ethylhexanoate catalyst	0.2	0.08
Butylated Hydroxy Toluene (BHT)	Inhibitor	0.01	0.01
Zelec® UN (2)	Internal mold release	1.0	0.39
Sachtolith® HD-S (3)	Zinc sulfide pigment	4.0	1.55
Camel-Fil® (4)	Calcium carbonate filler	100	38.75
M8610 (5)	Continuous filament mat	51.6	20.00

1) Luperox® P and Luperox® 26 are products of Arkema
2) Zelec® UN is a product of Stefen Company
3) Sachtolith® HD-S is a product of Sachtleben Chemie
4) Camel-Fil® is a product of IMERYS
5) M8610 is a product of Owens Corning®

The following data represents a typical value for the formula listed above. This value was measured with a Brookfield HBT 5x Viscometer at 77°F (FCTM 400) with the #3 spindle at 100 rpm. Actual customer results may vary.

Test	Value
Paste Viscosity	3,600

The following data represents typical values for the preceding formula. These values were obtained from panels molded at 300°F and 960 psi for three minutes. Panel thickness was approximately 0.125 inch. Actual customer results may vary.

Molded Panel Data			
Data Type	**Test Description**	**Value**	**Test Method**
Physical Properties	Tensile Strength	7,800 psi	ASTM D 638
	Tensile Modulus	1,030,000 psi	
	Elongation	1.29%	
	Flexural Strength	15,730 psi	ASTM D 790
	Flexural Modulus	780,000 psi	
	Notched Impact	14.5	ASTM D 256
	Unnotched Impact	19.2	
	Glass Content	18.2%	ASTM D 2584

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-Reichhold products available for commercial use.

SHELF LIFE & STORAGE

The shelf life of STYPOL® MGP Series resins is 180 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.

SAFETY & WARRANTY

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