PRODUCT BULLETIN

June 2021

Polynt A 6104 A

Flame-Retardant Polyester Resin

DESCRIPTION

Polynt A 6104 A is a pre-promoted, unsaturated polyester base resin in reactive monomer. Polynt A 6104 A is specifically formulated for use in open and closed molding applications requiring flame retardancy. When combined with ATH filler, Polynt A 6104 A can be used to produce parts meeting flame spread and smoke requirements for transportation applications.

BENEFITS & FEATURES

- Flame retardant
- Capable of high filler loading (20-38% Huber MoldX® P18)
- Superior surface cosmetics
- Resistance to fiberglass pattern print-through
- High heat distortion temperature equals reduced post-cure on finished parts
- Good reactivity

PROPERTIES – LIQUID

Property(1)	Unit	6104 A
NVM (110 °C)	%	53.1
Viscosity(2)	cps	100
Gel Time(3)	minutes	25
Gel to Peak	minutes	7.0
Peak Exotherm	°C/°F	181/358

1) All properties at 25°C/77°F unless otherwise noted
2) Brookfield Viscometer LVF Spindle #2 at 60 RPM
3) 1.5% United Initiators Norox® MEKP-9

PROPERTIES – PHYSICAL

Property	Unit	Neat Resin Casting	Test Method
Tensile Strength	psi	TBD	ASTM D 638
Tensile Modulus	psi	TBD	ASTM D 638
Tensile Elongation	%	TBD	ASTM D 638
Flexure Strength	psi	TBD	ASTM D 790
Flexure Modulus	psi	TBD	ASTM D 790
Heat Deflection Temperature	°C/°F	TBD	ASTM D648

1) Physical properties were determined using internal Polynt test methods that are similar to those listed above.
2) 1.5% United Initiators Norox® MEKP-9. Post cured 4 hours @ 150°F

Property	Unit	Hand Lay-up Laminate(2)	Infusion Laminate(3)	Test Method
Tensile Strength	psi	30,700	40,800	ASTM D 638
Tensile Modulus	psi	2,190,000	3,260,000	ASTM D 638
Tensile Elongation	%	2.58	2.31	ASTM D 638
Flexure Strength	psi	44,400	41,700	ASTM D 790
Flexure Modulus	psi	1,830,000	2,180000	ASTM D 790
Compression Stress	psi	37,700	27,700	ASTM D695
Compression Modulus	psi	1,870,000	1,970,000	ASTM D695
Impact Strength - Notched	ft-lbf/in^2	64	94.3	ASTM D256
Barcol Hardness	N/A	65	54	ASTM D2583
Water Absorption (24 hr @ 77°F)	%	0.13	0.09	ASTM D570
Glass Content	%	34	60	ASTM D2584

1) Physical properties were determined using internal Polynt test methods that are similar to those listed above.
2) Laminate Schedule: 1.5 oz. CSM, 18 oz. woven roving, 1.5 oz. CSM, 18 oz. woven roving, 1.5 oz. CSM. Gel Coat: Polycor® 55X4130 initiated with 1.8% MEKP-925. Resin: Polynt A 6104 A filled with 38% Huber MoldX® P18 initiated with Norox® 1.5% MELP-925. Cured at room temperature for 16 hours and post cured for 4 hours at 150°F.
3) Laminate Schedule: Owens Corning Multimat® S600/G500/S600, 4 plies Vectorply® E-Lti 3600, Owens Corning Multimat® S600/G500/S600. Gel Coat: ArmorFlex® 963XK161 initiated with 1.6% Luperox® DDM-9. Resin: Polynt A 6104 A filled with 20% Huber MoldX® P18 initiated with Norox® 1.5% MELP-925. Cured at room temperature for 16 hours and post cured for 4 hours at 150°F. All samples cut and testing parallel to the roll direction.

PROPERTIES - OTHER

Test	Application	Results	
Hand Lay-up Laminate(1), (2)			
ASTM E162-08: Surface Flammability of Materials using a Radiant Heat Energy Source	Transportation (Docket 90-A Recommended Fire Safety Practices for Transit Bus and Van Materials Selection)	Flame Spread Index, I_s = 15	
ASTM E662: Optical Smoke Density *Specific Optical Density (D_s at 1.5 min *Specific Optical Density (D_s) at 4.0 min		**Flaming** D_s = 11 D_s = 68	**Non-Flaming** D_s = 0 D_s = 6
BSS 7239: Gas Toxicity *CO ppm *HF ppm *HCl ppm *HCN ppm *SO_2 ppm *NO_2 ppm	Transportation	**Flaming** 413.5 <2.0 <1.0 <0.5 22.0 4.0	**Non-Flaming** 3.0 <2.0 <1.0 <0.5 2.0 1.0
ASTM E1354: Heat and Visible Smoke Release Rates Using an Oxygen Consumption Calorimeter *Total Energy	Multiple	2149 BTU/lb	

1) Laminate Schedule: 1.5 oz. CSM, 18 oz. woven roving, 1.5 oz. CSM, 18 oz. woven roving, 1.5 oz. CSM. Gel Coat: Polycor® 55X4130 initiated with 1.8% MEKP-925. Resin: Polynt A 6104 A filled with 38% Huber MoldX® P18 initiated with Norox® 1.5% MELP-925. Cured at room temperature for 16 hours and post cured for 4 hours at 150°F. Gel coated side toward the flame source.
2) Refer to SGS Test Report 3-43684-0, -1, -2, -3 and -4; Completed May 2021

Test	Application	Results	
Infusion Laminate[1], [2]			
ASTM E162-08: Surface Flammability of Materials using a Radiant Heat Energy Source	Transportation (Docket 90-A Recommended Fire Safety Practices for Transit Bus and Van Materials Selection)	Flame Spread Index, I_s = 5	
ASTM E662: Optical Smoke Density *Specific Optical Density (D_s) at 1.5 min *Specific Optical Density (D_s) at 4.0 min		**Flaming** D_s = 3 D_s = 33	**Non-Flaming** D_s = 0 D_s = 2
BSS 7239: Gas Toxicity *CO ppm *HF ppm *HCl ppm *HCN ppm *SO_2 ppm *NO_2 ppm	Transportation	**Flaming** 191.0 <2.0 <1.0 <0.5 9.5 1.5	**Non-Flaming** 31.5 <2.0 <1.0 <0.5 2.0 0.0
ASTM E1354: Heat and Visible Smoke Release Rates Using an Oxygen Consumption Calorimeter *Total Energy	Multiple	1762 BTU/lb	

1) Laminate Schedule: Owens Corning Multimat® S600/G500/S600, 4 plies Vectorply® E-Lti 3600, Owens Corning Multimat® S600/G500/S600. Gel Coat: ArmorFlex® 963XK161 initiated with 1.6% Luperox® DDM-9. Resin: Polynt A 6104 A filled with 20% Huber MoldX® P18 initiated with Norox® 1.5% MELP-925. Cured at room temperature for 16 hours and post cured for 4 hours at 150°F. Non-gel coated side toward the flame source.
2) Refer to SGS Test Report 3-43686-0, -1, -2, -3 and -4; Completed May 2021

APPLICATION

Polynt A 6104 A is formulated with low viscosity to allow for use of filler while still achieving thorough wet-out of reinforcing materials and rapid fill times.

Filled System[1]	20%		38%	
Temperature	77°F	90°F	77°F	90°F
Filled Viscosity	171 cps	122 cps	364 cps	251 cps

[1] Huber MoldX® P18

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 Polynt A 6104 A 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.

SAFETY & WARRANTY

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