

Bayblend® FR 110

Acrylonitrile Butadiene Styrene + PC

Bayer MaterialScience LLC



Prospector

Product Description

Bayblend FR110 resin is an easy-flow flame-retardant blend of Makrolon® polycarbonate and acrylonitrile butadiene styrene (ABS) resins. The flame-retardant additive in this grade is antimony/bromine/chlorine-free. Bayblend FR110 exhibits excellent weld-line strength, high heat resistance and high impact strength. This resin is supplied in pellet form for injection molding applications. It is naturally opaque and is available in custom colors and with special visual effects.

General

Material Status	• Commercial: Active		
Availability	• North America		
Additive	• Flame Retardant		
Features	• Antimony Free • Bromine Free • Chlorine Free • Flame Retardant	• Good Color Stability • Good Flow • Good Stiffness • Good Toughness	• High Heat Resistance • High Impact Resistance
Uses	• Business Equipment • Computer Components	• Electrical/Electronic Applications • Housings	• Printer Parts
Agency Ratings	• EU 2000/53/EC	• EU 2002/96/EC	• EU 2003/11/EC
RoHS Compliance	• RoHS Compliant		
Appearance	• Colors Available	• Natural Color	
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1) • Secant Modulus vs. Strain (ISO 11403-1)	• Shear Modulus vs. Temperature (ISO 11403-2) • Viscosity vs. Shear Rate (ISO 11403-2)	

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity	1.19	1.19 g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR) (240°C/5.0 kg)	20 g/10 min	20 g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.0040 to 0.0060 in/in	0.40 to 0.60 %	ASTM D955
Water Absorption (Saturation, 73°F (23°C))	0.050 %	0.050 %	ASTM D570
Spiral Flow Length 490°F (254°C), 0.10 in (2.54 mm)	23 in	584 mm	Internal Method

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus	380000 psi	2620 MPa	ASTM D638
Tensile Strength			ASTM D638
Yield	8700 psi	60.0 MPa	
Break	7200 psi	49.6 MPa	
Tensile Elongation			ASTM D638
Yield	4.0 %	4.0 %	
Break	> 50 %	> 50 %	
Flexural Modulus	390000 psi	2690 MPa	ASTM D790
Flexural Strength (5.0% Strain)	13800 psi	95.1 MPa	ASTM D790

Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Notched Izod Impact 73°F (23°C), 0.125 in (3.18 mm)	14 ft-lb/in	750 J/m	ASTM D256
Instrumented Dart Impact ^{2, 3} 0.125 in (3.18 mm), Total Energy	456 in-lb	51.5 J	ASTM D3763

Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (R-Scale)	122	122	ASTM D785

Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load 66 psi (0.45 MPa), Unannealed, 0.250 in (6.35 mm)	212 °F	100 °C	ASTM D648
264 psi (1.8 MPa), Unannealed, 0.250 in (6.35 mm)	203 °F	95.0 °C	
Vicat Softening Temperature	230 °F	110 °C	ISO 306/B120

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Revision History

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Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
CLTE - Flow	0.000043 in/in/°F	0.000077 cm/cm/°C	ASTM D696
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	> 1.0E+14 ohms	> 1.0E+14 ohms	IEC 60093
Volume Resistivity	> 1.0E+13 ohm-cm	> 1.0E+13 ohm-cm	ASTM D257
Relative Permittivity			IEC 60250
100 Hz	3.20	3.20	
1 MHz	3.10	3.10	
Dissipation Factor			IEC 60250
100 Hz	0.0030	0.0030	
1 MHz	0.0080	0.0080	
Comparative Tracking Index	350 V	350 V	IEC 60112
Electric Strength	760 V/mil	30 kV/mm	IEC 60243-1
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL			UL 94
0.0787 in (2.00 mm)	5VB	5VB	
0.118 in (3.00 mm)	5VA	5VA	
Oxygen Index	30 %	30 %	ASTM D2863
UL	Nominal Value (English)	Nominal Value (SI)	Test Method
RTI Str (0.0591 in (1.50 mm))	185 °F	85.0 °C	UL 746
RTI Imp (0.0591 in (1.50 mm))	185 °F	85.0 °C	UL 746
RTI Elec (0.0591 in (1.50 mm))	203 °F	95.0 °C	UL 746
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	175 °F	79.4 °C	
Drying Time	4.0 hr	4.0 hr	
Suggested Max Moisture	0.020 %	0.020 %	
Suggested Max Regrind	20 %	20 %	
Rear Temperature	430 to 445 °F	221 to 229 °C	
Middle Temperature	435 to 455 °F	224 to 235 °C	
Front Temperature	445 to 465 °F	229 to 241 °C	
Nozzle Temperature	485 to 505 °F	252 to 263 °C	
Processing (Melt) Temp	430 to 520 °F	221 to 271 °C	
Mold Temperature	140 to 175 °F	60.0 to 79.4 °C	
Injection Pressure	10000 to 16000 psi	68.9 to 110 MPa	
Injection Rate	Slow-Moderate	Slow-Moderate	
Back Pressure	50.0 to 100 psi	0.345 to 0.689 MPa	
Screw Speed	40 to 70 rpm	40 to 70 rpm	
Clamp Tonnage	3.0 to 5.0 tons/in ²	4.1 to 6.9 kN/cm ²	
Cushion	0.125 to 0.250 in	3.18 to 6.35 mm	

Injection Notes

Hold Pressure: 50 to 75% Injection Pressure

Notes

¹ Typical properties: these are not to be construed as specifications.

² 22.0 ft/sec (6.71 m/sec)

³ 0.5 in dart, 3 in clamp