

Technical Information



CALIBRE™ EV31 GF10-15 Advanced Resin

Overview

CALIBRE™ EV31 GF10-15 Advanced Resin is an ignition-resistant, 10% glass reinforced polycarbonate resin. This resin does not contain brominated or chlorinated flame retardant additives. It is a medium flow PC resin with a mold release system, intended for applications requiring high stiffness. CALIBRE™ EV31 GF10-15 has a UL94 V-0 rating at 1.5 mm.

Applications:

- Battery module endplate

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.28 g/cm ³	1.28 g/cm ³	ASTM D792 ISO 1183
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	15 g/10 min	15 g/10 min	ASTM D1238 ISO 1133
Molding Shrinkage			
Flow	3.5E-3 to 5.0E-3 in/in	0.35 to 0.50 %	ASTM D955
Across Flow	4.0E-3 to 5.5E-3 in/in	0.40 to 0.55 %	ASTM D955
Flow	4.0E-3 to 6.0E-3 in/in	0.40 to 0.60 %	ISO 294-4
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-- 1	580000 psi	4000 MPa	ASTM D638
--	580000 psi	4000 MPa	ISO 527-1/1
Tensile Strength			
Yield ²	9430 psi	65.0 MPa	ASTM D638
Yield	9430 psi	65.0 MPa	ISO 527-2/5
Break ²	9430 psi	65.0 MPa	ASTM D638
Break	6530 psi	45.0 MPa	ISO 527-2/5
Tensile Elongation			
Break ²	4.0 %	4.0 %	ASTM D638
Break	9.0 %	9.0 %	ISO 527-2/5
Flexural Modulus			
-- 3	551000 psi	3800 MPa	ASTM D790
-- 4	551000 psi	3800 MPa	ISO 178
Flexural Strength			
-- 3	17400 psi	120 MPa	ASTM D790
-- 4	15200 psi	105 MPa	ISO 178
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength (73°F (23°C))	2.9 ft-lb/in ²	6.0 kJ/m ²	ISO 179/1eA
Notched Izod Impact Strength ⁵ (73°F (23°C))	4.3 ft-lb/in ²	9.0 kJ/m ²	ISO 180/1A

Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed	280 °F	138 °C	ASTM D648
66 psi (0.45 MPa), Unannealed	286 °F	141 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	264 °F	129 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	271 °F	133 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	282 °F	139 °C	ISO 75-2/A
Vicat Softening Temperature	293 °F	145 °C	ISO 306/B50
Ball Indentation Temperature	> 266 °F	> 130 °C	IEC 60335-1
CLTE - Flow	8.3E-6 in/in/°F	1.5E-5 cm/cm/°C	ISO 11359-2
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+16 ohms·cm	1.0E+16 ohms·cm	IEC 60093
Electric Strength	1800 V/mil	70 kV/mm	IEC 60243-1
Dielectric Constant			IEC 60250
0.0787 in (2.00 mm), 50 Hz	3.00	3.00	
0.0787 in (2.00 mm), 1 MHz	3.10	3.10	
Dissipation Factor			IEC 60250
50 Hz	8.0E-3	8.0E-3	
1 MHz	0.016	0.016	
Comparative Tracking Index			IEC 60112
0.118 in (3.00 mm), Solution A	200 V	200 V	
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating ⁶			UL 94
0.06 in (1.5 mm)	V-0	V-0	
0.12 in (3.0 mm)	5V	5V	
Glow Wire Flammability Index ⁶			IEC 60695-2-12
0.08 in (2.0 mm)	1760 °F	960 °C	
Glow Wire Ignition Temperature ⁶			IEC 60695-2-13
0.04 in (1.0 mm)	1760 °F	960 °C	
0.08 in (2.0 mm)	1760 °F	960 °C	
0.12 in (3.0 mm)	1760 °F	960 °C	
Oxygen Index ⁶	29 %	29 %	ISO 4589-2
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	248 °F	120 °C	
Drying Time	3.0 to 4.0 hr	3.0 to 4.0 hr	
Processing (Melt) Temp	545 to 599 °F	285 to 315 °C	
Mold Temperature	176 to 230 °F	80 to 110 °C	

Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

¹ 0.039 in/min (1.0 mm/min)

² 0.20 in/min (5.0 mm/min)

³ 0.051 in/min (1.3 mm/min)

⁴ 0.079 in/min (2.0 mm/min)

⁵ 4 mm

⁶ This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.

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