

Product Description

Vinyl ester BMC suitable for stationary fuel cells. This material was specifically formulated to mold bipolar plates for use in electro-chemical devices capable of generating electricity from oxygen and hydrogen.

General

Material Status	• Commercial: Active		
Availability	• North America • Asia Pacific	• Europe • South America	
Filler / Reinforcement	• Conductive fiber and conductive filler		
Features	• High conductivity	• Excellent corrosion resistance	• Cost effective
Resin	• Vinyl ester		

Processing Method

Mold Temperature	310 – 330	°F
Cure Time (<3.0 mm thick)	30 – 90	seconds
Recommend Press Tonnage	3 – 4	tons/in ² on Projected Area
Final Press Closure Speed (Start of material flow to close)	1 – 3	seconds
Time to Full Press Tonnage (Close to full tonnage)	< 1.0	seconds
Post Bake Temperature	180 – 200	°C
Post Bake Time at Temperature	>20	minutes

Physical	Typical	Unit	Test Method
Density	1.80 – 1.84	g/cm ³	ASTM D792
Mold Shrinkage (RT mold/RT part)	0.00094 - 0.0012	in/in	ASTM D955
Water Absorption, 24 hrs., 23°C	<.10	%	ASTM D570
CLTE, X – Y plane	30	ppm/°C	ASTM E831
Poisson's Ratio	0.32		ASTM D638

Mechanical (As molded)	Typical	Unit	Test Method
Tensile Modulus	1.6 E+6 (11)	psi (GPa)	ASTM D638
Tensile Strength	4,400 (30)	psi (MPa)	ASTM D638
Flexural Modulus (RT)	1.5 E+6 (10.35)	psi (GPa)	ASTM D790
Flexural Strength	5,800 (40)	psi (MPa)	ASTM D790
Compressive Strength	11,000 (75)	psi (MPa)	ASTM D695
Compressive Creep, 200 psi			ASTM D2290
200 hr. at 80°C	0.025	%	
1000 hr. at 80 ° C	0.040	%	

Impact	Typical	Unit	Test Method
Unnotched Impact Strength	0.3 (16)	ft-lb/in (J/m)	ASTM D4812
Instrumented Impact at 23°C			ASTM D3763
Max Load	169	N	
Total Energy	2.63	N - M	
Energy to Max Load	0.55	N – M	

Thermal	Typical	Unit	Test Method
Glass Transition T _g	392 (200)	°F (°C)	ASTM D4065
Thermal Conductivity, 25°C		W/m - °K	ASTM E1461
In Plane/Through Plane at 25°C	46.2 (19.2)		
In Plane/Through Plane at 85°C	43.7 (18.5)		
Diffusivity		cm ² /s	ASTM E1461
In Plane/Through Plane at 25°C	0.302 / 0.125		

Technical Data Sheet
BMC 940-8649
 Engineered Composites



In Plane/Through Plane at 85°C	0.231 / 0.098		
Specific Heat Capacity		J/kg – K	ASTM E1461
At 25°C	1.04		
At 85°C	0.841		
Electrical	Typical	Unit	Test Method
Conductivity			Vendor
Through Plane (Z direction)	50	s/cm	
In Plane (X, Y direction)	100	s/cm	
Typical Process Settings			
Mold Temperature	310 – 330	°F	
Cure Time (<3.0 mm thick)	30 – 90	seconds	
Recommend Press Tonnage	3 – 4	tons/in ² on Projected Area	
Final Press Closure Speed (Start of material flow to close)	1 – 3	seconds	
Time to Full Press Tonnage (Close to full tonnage)	< 1.0	seconds	
Post Bake Temperature	180 – 200	°C	
Post Bake Time at Temperature	>20	minutes	

Notes

These are typical property values not to be construed as specification limits.

Processing Techniques

Specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

Company Information

For further information regarding the LyondellBasell company, please visit <http://www.lyb.com/>.

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