BMC 940-8649

Bulk Molding Compound

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 Composite		

Processing Method

Mold Temperature	310-330	F
Cure Time (<3.0mm thick)	30-90	Seconds
Recommend Press Tonnage	3-4	Tons/in2 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	Second
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	<0.10	%	ASTM D570
CLTE, X-Y plane	30	ppm/°C	ASTM E831
Poisson's Ratio	0.32		ASTM D638

BMC 940-8649

Bulk Molding Compound

MECHANICAL (As molded)	Typical	Unit	Test Method
Tensile Modulus	1.6 x 10^6 (11)	psi (GPa)	ASTM D638
Tensile Strength	4,400 (30)	psi (MPa)	ASTM D638
Flexural Modulus (RT)	1.5 x 10^6 (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 D2990
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	lbs	
Total Energy	2.63	ft-lb	
Energy to Max Load	0.55	ft-lb	

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		cm2/s	ASTM E1461
In Plane/Through Plane at 25°C	0.302/0.125		
In Plane/Through Plane at 85°C	0.231/0.098		
Specific Heat Capacity		J/kg-K	ASTM E1461
In Plane	1.04		
Through Plane	0.841		

BMC 940-8649
Bulk Molding Compound

ELECTRICAL Conductivity	Typical	Unit	Test Method 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 (<3.0mm thick)	30-90	Seconds
Recommend Press Tonnage	3-4	Tons/in2 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	Second
Post Bake Temperature	180-200	C
Post Bake Time at Temperature	>20	Minutes

For additional information, please contact:

A. Schulman Inc., Engineered Composites
1600 Powis Ct, West Chicago, IL 60185
p: 630-377-1065
f: 630-377-7395
www.aschulman.com

Revision Date: July 12, 2016