

RESINOL® EPF 400

Phenolic

RASCHIG GmbH

Message:

Glass-fibre reinforced phenolic moulding compound

Excellent heat resistance, low mould shrinkage and post-shrinkage, good chemical resistance and very good mechanical properties

Primary application(s): Commutators

This product meets the allowed upper limits for heavy metals and PCAs and also conforms to the requirements of the EU directives 2002/95 (RoHS), 2002/96 (WEEE) and 2006/122 (PFOS)

Identification according to ISO 800: PF2C3

General Information			
Filler / Reinforcement	Glass Fiber		
Features	Good Chemical Resistance		
	High Heat Resistance		
	Low Shrinkage		
Uses	Electrical Parts		
Agency Ratings	EU 2002/96/EC (WEEE)		
	EU 2006/122/EC		
RoHS Compliance	RoHS Compliant		
Appearance	Black		
Forms	Granules		
Processing Method	Compression Molding		
	Injection Molding		

Physical	Nominal Value	Unit	Test Method
Density	1.85 to 1.95	g/cm ³	ISO 1183
Apparent Density	0.60 to 0.80	g/cm ³	ISO 60
Molding Shrinkage - Flow ¹	0.30 to 0.50	%	ISO 2577
Water Absorption (23°C, 24 hr)	< 0.20	%	ISO 62
Post Shrinkage ²	< 0.050	%	ISO 2577
Maximum Service Temperature			IEC 60216
<50 h	230	°C	
20,000 h	150	°C	
Compression Molding Molding Pressure	> 20.0	MPa	
Compression Molding Temperature	165 to 180	°C	

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			ISO 527-2
Compression Molded	7000 to 9000	MPa	
Injection Molded	7000 to 9000	MPa	

Tensile Stress			ISO 527-2
Compression Molded	70.0 to 90.0	MPa	
Injection Molded	100 to 120	MPa	
Flexural Modulus			ISO 178
Compression Molded	16000 to 18000	MPa	
Injection Molded	18000 to 22000	MPa	
Flexural Stress			ISO 178
Compression Molded	120 to 140	MPa	
Injection Molded	200 to 220	MPa	
Compressive Stress	250 to 300	MPa	ISO 604
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
Compression Molded	2.0 to 3.0	kJ/m ²	
Injection Molded	3.0 to 5.0	kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
Compression Molded	6.0 to 8.0	kJ/m ²	
Injection Molded	10 to 12	kJ/m ²	
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
1.8 MPa, Unannealed	> 200	°C	ISO 75-2/A
8.0 MPa, Unannealed	160 to 180	°C	ISO 75-2/C
CLTE - Flow (50 to 150°C)	1.5E-5 to 2.0E-5	cm/cm/°C	ISO 11359-2
Thermal Conductivity	0.40 to 0.60	W/m/K	ASTM E1461
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity	1.0E+10 to 1.0E+11	ohms	IEC 60093
Volume Resistivity	1.0E+12 to 1.0E+13	ohms · cm	IEC 60093
Electric Strength	20 to 30	kV/mm	IEC 60243-1
Relative Permittivity			IEC 60250
	8.00		
100 Hz	6.00		
	6.00		
1 MHz	4.00		
Dissipation Factor			IEC 60250
100 Hz	0.10 to 0.20		
1 MHz	0.020 to 0.030		
Arc Resistance	PLC 4		ASTM D495
Comparative Tracking Index	> 175	V	IEC 60112

Flammability	Nominal Value	Unit	Test Method
Flame Rating (1.50 mm, Tested by RASCHIG)	V-0		UL 94
Glow Wire Flammability Index	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	960	°C	IEC 60695-2-13
Injection	Nominal Value	Unit	
Middle Temperature	60.0 to 80.0	°C	
Front Temperature	80.0 to 100	°C	
Processing (Melt) Temp	100 to 115	°C	
Mold Temperature	160 to 180	°C	
Back Pressure	0.500 to 1.50	MPa	
Screw Speed	70 to 100	rpm	
NOTE			
1.	Compression Molded		
2.	168 h / 110°C		

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