Bakelite® PF 4109

PF-(GF+X) Momentive Specialty Chemicals

Product Texts

Product description:

Phenolic moulding compound, inorganically filled, glass fibre reinforced, ammonia and acetic acid free, electrically high grade, high temperature stability, low shrinkage, high mechanical strength, UL listed moulding compound 0.84 mm / V-0 (BK).

Application areas:

Commutators (fuel pumps, actuators, HVAC motors, fan motors, window lift motors, ABS, wiper motors, garden appliances, household appliances, power tools, universal motors), bobbins.

Property Name	Value	Unit	Standard No.
Apparent density (moulding compound)	0.81	g/cm³	ISO 60
Moulding shrinkage (compression moulding, longitudinal)	0.1	%	ISO 2577
Post shrinkage (compression moulding, 168h/110°C)	0.1	%	ISO 2577
Compr. strength (test spec. flat tested)	200	MPa	ISO 604
Flexural strength (2mm/min)	140	MPa	ISO 178
Flexural modulus	17000	MPa	ISO 178
Ball indentation hardness (H 961/30)	400	MPa	ISO 2039/P1
Water absorption (24h/23°C)	8	mg	similar to ISO 62

Additional characteristics: .5, .9, HT, D, LB, UL, ES, P

Preparation of Test Specimens of Thermosetting Moulding Compound

- Compression to ISO 295
- Injection to ISO 10724

Storage capability

6 months (relative humidity of 50-60% and maximum storage temperature of approximately 20°C)

Mechanical properties	Value	Unit	Test Standard
ISO Data			
Charpy impact strength (+23°C)	8	kJ/m²	ISO 179/1eU
Charpy notched impact strength (+23°C)	3	kJ/m²	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
ISO Data			
Temp. of deflection under load, 8.00 MPa	175	°C	ISO 75-1/-2

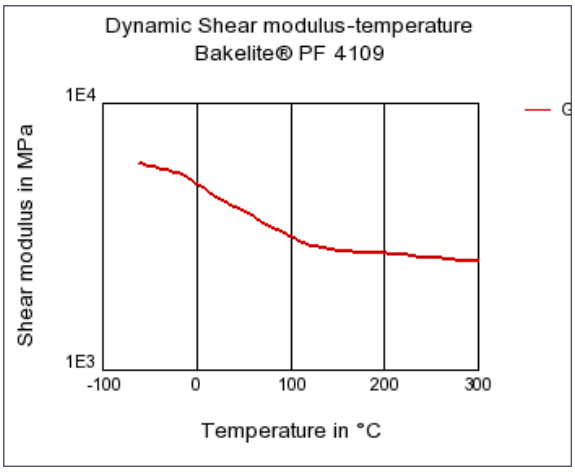
Electrical properties	Value	Unit	Test Standard
ISO Data			
Relative permittivity, 100Hz	8	-	IEC 60250
Dissipation factor, 100Hz	0.1	E-4	IEC 60250
Volume resistivity	1E10	Ohm*m	IEC 60093
Surface resistivity	1E11	Ohm	IEC 60093
Electric strength	30	kV/mm	IEC 60243-1
Comparative tracking index	225	-	IEC 60112

Other properties	Value	Unit	Test Standard
ISO Data			
Density	1920	kg/m³	ISO 1183

Test specimen production	Value	Unit	Test Standard
ISO Data			
Injection Molding, injection temperature	115	°C	ISO 10724
Injection Molding, injection velocity	170	mm/s	ISO 10724
Injection Molding, hold pressure	100	MPa	ISO 10724
Injection Molding, cure time	25	min	ISO 10724
Compression Molding, mold temperature	160	°C	ISO 295
Compression Molding, cure time	1	min	ISO 295

Diagrams

Dynamic Shear modulus-temperature



Characteristics

Processing

Injection Molding, Transfer Molding

Other text information

Injection Molding

VERARBEITUNG	Temperature of material:	105-115	°C
	Mould temperature:	160-190	°C
	Curing time:	10-20	sec
	Further Information:		
	Barrel temperature		
	- Feed zone:	60-75	°C
	- Nozzle zone:	80-100	°C
	Cavity moulding pressure: d>	>15	MPa
	Back pressure:	0.5-2	MPa
	Holding pressure:	60% of injection pressure	

Compression molding

PROCESSING	Mould temperature:	160-190	°C
	Curing time:	20-40	sec
	Cavity moulding pressure:	>15	MPa