

Hepla® H9033GF FR

Material Description:

Hepla® H9033GF FR is a 33% glass-fiber reinforced, flame retardant grade of polyphthalamide (PPA) resin specifically formulated for connector applications requiring compatibility with both infrared and vapor phase soldering operations typically used by the electronics industry. Hepla® H9033GF FR offers high flow and short molding cycles, thereby enhancing molding productivity and lowering costs.

General

Material Status	• Commercial: Active
Availability	• Asia Pacific • North America • Europe • Latin America • Middle East • Africa
Filler/Reinforcement	• Glass Fiber, 33% Filler by Weight
Additive	• Flame Retardant
Features	• Chemical Resistant • Flame Retardant • Good Dimensional Stability • Good Electrical Properties • Good Stiffness • High Flow • High Strength • Hot Water Moldability
Uses	• Automotive Applications • Automotive Electronics • Bobbins • Connectors • Electrical/Electronic Applications
Appearance	• Black • Natural Color
RoHS Compliance	• RoHS Compliant
Forms	• Pellets
Processing Method	• Water-Heated Mold Injection Molding
Multi-Point Data	• Isochronous Stress vs. Strain (ISO 11403-1) • Isothermal Stress vs. Strain (ISO 11403-1) • Secant Modulus vs. Strain (ISO 11403-1) • Viscosity vs. Shear Rate (ISO 11403-2)

Physical Properties	Typical Value	Unit	Test Method
Density/Specific Gravity	1.68	g/cm ³	ISO 1183/A
Molding Shrinkage			ASTM D955
Flow	0.3	%	
Across Flow	0.6	%	
Water Absorption (24 hr)	0.2	%	ASTM D570

Mechanical Properties	Typical Value	Unit	Test Method
Tensile Modulus			
	16100	MPa	ASTM D638
23°C	14500	MPa	ISO 527-2
100°C	9170	MPa	ISO 527-2
150°C	5930	MPa	ISO 527-2
175°C	5100	MPa	
Tensile Stress			
Break, 23°C	186	MPa	ISO 527-2
Break, 100°C	114	MPa	ISO 527-2
Break, 150°C	75.2	MPa	ISO 527-2
Break, 175°C	63.4	MPa	ISO 527-2
	199	MPa	ASTM D638
Tensile Elongation			
Break	1.7	%	ASTM D638
Break, 23°C	1.6	%	ISO 527-2
Break, 100°C	2.4	%	ISO 527-2

Break,150℃	5.1	%	ISO 527-2
Break,175℃	4.9	%	ISO 527-2
Flexural Modulus			
	13100	MPa	ASTM D790
23℃	12600	MPa	ISO 178
100℃	8070	MPa	ISO 178
150℃	4960	MPa	ISO 178
175℃	4620	MPa	ISO 178
Flexural Strength			
	224	MPa	ASTM D790
23℃	259	MPa	ISO 178
100℃	161	MPa	ISO 178
150℃	101	MPa	ISO 178
175℃	87.6	MPa	ISO 178
Compressive Strength	145	MPa	ASTM D695
Shear Strength	80	MPa	ASTM D732

Impact Properties	Typical Value	Unit	Test Method
Notched Izod Impact			
	85	J/m	ASTM D256
23℃	8.2	kJ/m ²	ISO 180/1A
Unnotched Izod Impact			
	690	J/m	ASTM D256
23℃	44	kJ/m ²	ISO 180/1U
Charpy Notched Impact Strength			
23℃	14	kJ/m ²	ISO 179/1eA
23℃	14	kJ/m ²	ISO 179/2eA
Charpy Unnotched Impact Strength			ISO 179/1eU
23℃	46	kJ/m ²	

Flammability	Typical Value	Unit	Test Method
Flame Rating(0.8mm)	V-0		UL 94

Electrical Properties	Typical Value	Unit	Test Method
Volume Resistivity	1E+15	Ohms-cm	ASTM D257
Surface Resistivity	1E+15	ohms	ASTM D257
Dielectric Strength(3.18mm)	24	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
100 Hz	4.4		
1 MHz	4.1		ASTM D150
Dissipation Factor(1 MHz)	0.011		
Comparative Tracking Index(CTI)	PLC 1		UL 746
High Amp Arc Ignition (HAI)			UL 746
0.75mm	PLC 0		
1.5mm	PLC 0		
3mm	PLC 0		
Hot-wire Ignition (HWI)			UL 746
0.75mm	PLC 0		
1.5mm	PLC 0		
3mm	PLC 0		

Thermal Properties	Typical Value	Unit	Test Method
Deflection Temperature Under Load			
1.8 MPa, Unannealed	282	℃	ISO 75-2/A
1.8 MPa, Annealed	277	℃	ASTM D648
Melting Temperature			
	310	℃	ISO 11357-3
	310	℃	ASTM D3418
CLTE			ASTM E831
Flow : 0 to 100℃	1.70E-05	cm/cm/℃	
Flow : 100 to 200℃	7.00E-06	cm/cm/℃	
Transverse : 0 to 100℃	6.40E-05	cm/cm/℃	
Transverse : 10 to 200℃	1.10E-04	cm/cm/℃	

Processing Information	Typical Value	Unit
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Processing (Melt) Temp	321 to 338	°C
Mold Temperature	66 to 93	°C
Drying Temperature	< 120	°C
Drying Time	4	hr
Suggested Max Moisture	0.03 to 0.06	%
Rear Temperature	327 to 332	°C
Middle Temperature	316 to 324	°C
Front Temperature	316 to 324	°C

NFD ADVANCED COMPOSITES

Hepla® H9033GF FR

CAUTION/警告!

Before using, read the Molding Guide, Material Safety Data Sheets, and Bulletins available from NFD Advanced Composites Sales offices and Distributors supplied to your company. Caution! During drying, purging and molding, small amounts of hazardous gases and/or particulate matter may be released. These may irritate eyes, nose and throat. Use adequate local exhaust ventilation during thermal processing. To prevent resin decomposition, do not contaminate the resin or exceed the recommended melt temperature or hold-up time. Avoid inhalation or skin and eyes contact. Sweep up and dispose of spilled resin to eliminate slipping hazard. 在使用之前, 请阅读NFD公司销售办事处和经销商提供给贵公司的材料成型指南、材料安全数据表和公告。警告! 在干燥、吹扫和成型过程中, 少量有害气体或颗粒物质可能会在被释放, 这些可能会刺激眼睛, 鼻子和喉咙。热处理过程中请注意做好排气通风工作。为防止树脂分解, 请勿污染树脂或超过我们为您推荐的热融温度或时间。请避免吸入或与皮肤、眼睛等接触。清扫和处理溢出的树脂, 以消除滑到的危险。

LEGAL NOTICES/法律声明

The figures indicated here are approximate values. They may be affected by different factors, and the user is not released therefore from the obligation of performing checks and trials of his own. The values indicated here have been compiled on the basis of current tests and findings. Any legally binding guarantee of certain properties, or any suitability for a specific application can not be inferred from the present data. For detailed production regulatory information, contact customer service.

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