Torlon® 5030
polyamide-imide

Torlon® 5030 is a 30% glass-fiber reinforced grade of polyamide-imide (PAI) resin. It offers high strength and modulus and exceptional creep resistance. It has thermal expansion characteristics similar to aluminum and therefore excellent dimensional stability.

Torlon® PAI has the highest strength and stiffness of any thermoplastic up to 275°C (525°F). It has outstanding resistance to wear, creep and chemicals.

The mechanical properties of Torlon® 5030 resin make it a candidate for metal replacement in high temperature, high stress applications. In addition, it offers outstanding electrical properties, which makes it ideal for high performance parts such as connectors, switches and relays.

- High Flow: Torlon® 5030-HF
- Low Flow: Torlon® 5030-LF
- Extrusion Grade: Torlon® 5030-E

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 30% Filler by Weight	
Features	• Chemical Resistant • Creep Resistant • Flame Retardant • Good Compressive Strength	• Good Dimensional Stability • High Heat Resistance • High Stiffness • High Temperature Strength
Uses	• Aerospace Applications • Aircraft Applications • Automotive Applications • Business Equipment • Connectors • Electrical Housing • Electrical Parts • Electrical/Electronic Applications • Housings	• Industrial Applications • Industrial Parts • Machine/Mechanical Parts • Metal Replacement • Oil/Gas Applications • Sealing Devices • Switches • Valves/Valve Parts
RoHS Compliance	• RoHS Compliant	
Forms	• Pellets	
Processing Method	• Injection Molding • Machining	• Profile Extrusion

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.61		ASTM D792
Molding Shrinkage - Flow	0.10 to 0.25	%	ASTM D955
Water Absorption (24 hr)	0.24	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	14500	MPa	ASTM D638

Mechanical	Typical Value	Unit	Test method
Tensile Strength	221	MPa	ASTM D638
Tensile Stress	205	MPa	ASTM D1708
Tensile Elongation			
Break	2.3	%	ASTM D638
Break[1]	7.0	%	ASTM D1708
Flexural Modulus			ASTM D790
23°C	11700	MPa	
232°C	9860	MPa	
Flexural Strength			ASTM D790
23°C	333	MPa	
232°C	181	MPa	
Compressive Modulus	7930	MPa	ASTM D695
Compressive Strength	264	MPa	ASTM D695

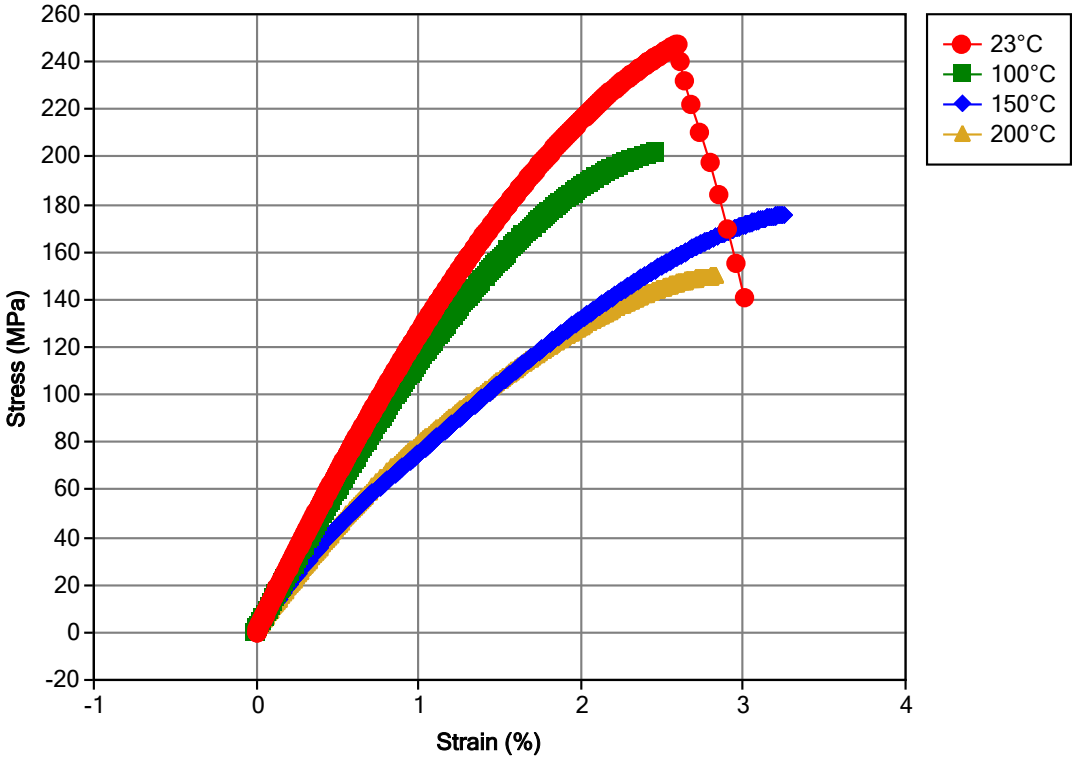
Impact	Typical Value	Unit	Test method
Notched Izod Impact	80	J/m	ASTM D256
Unnotched Izod Impact	530	J/m	ASTM D4812

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	282	°C	
Thermal Conductivity	0.36	W/m/K	ASTM C177
Coefficient of Linear Thermal Expansion	1.6E-5	cm/cm/°C	ASTM D696

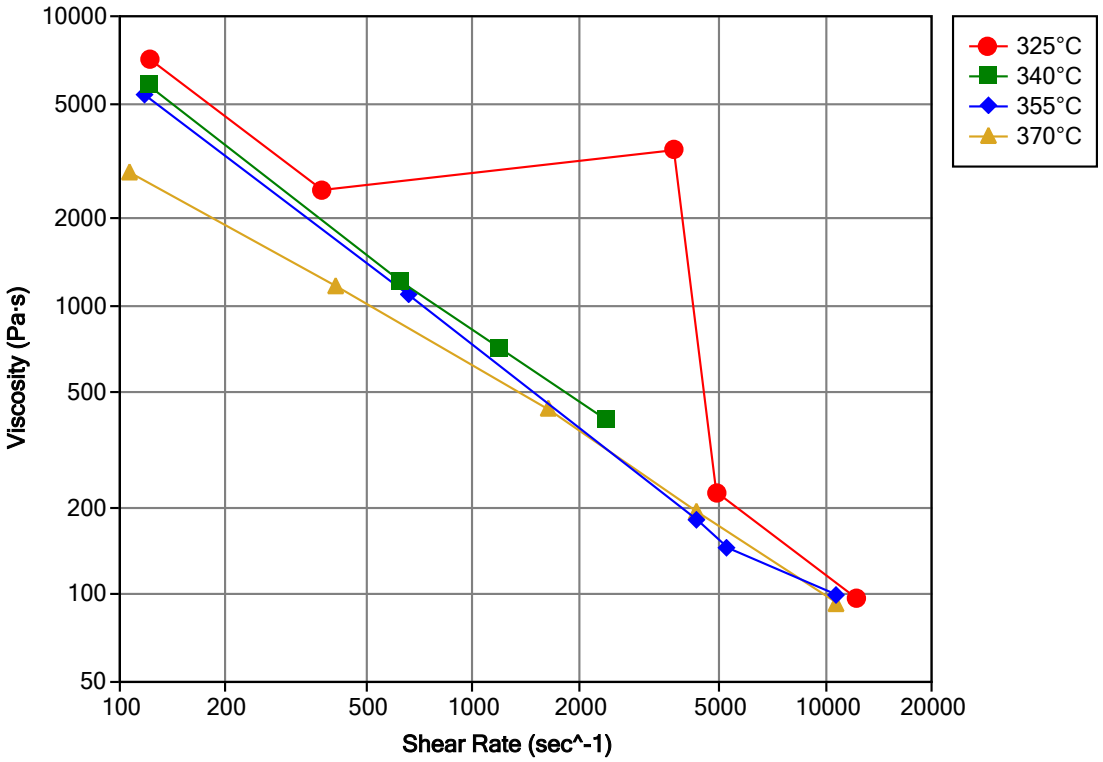
Electrical	Typical Value	Unit	Test method
Surface Resistivity	1.0E+18	ohms	ASTM D257
Volume Resistivity	2.0E+17	ohms·cm	ASTM D257
Dielectric Strength	33	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	4.40		
1 MHz	4.20		
Dissipation Factor			ASTM D150
60 Hz	0.022		
1 MHz	0.050		

Injection	Typical Value	Unit
Drying Temperature	177	°C
Drying Time	3.0	hr
Suggested Max Moisture	0.050	%
Rear Temperature	304	°C
Nozzle Temperature	371	°C
Mold Temperature	199 to 216	°C
Back Pressure	6.89	MPa
Screw Speed	50 to 100	rpm
Screw L/D Ratio	18.0:1.0 to 24.0:1.0	

Isothermal Stress vs. Strain (ISO 11403)



Viscosity vs. Shear Rate (ISO 11403)



Notes

Typical properties: these are not to be construed as specifications.

[1] ASTM Test Method D1708 has been used to measure the tensile properties of PAI and similar materials because the small test specimen conserved material.
Today the most widely used specimen is the Type 1 bar of ASTM D638. These D1708 values are included for historical purposes and they should not be compared to the D638 values.

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