Torlon® 7130
polyamide-imide

Torlon® 7130 is an 30% carbon-fiber reinforced grade of polyamide-imide (PAI) resin. It offers high strength and modulus, exceptional creep resistance, and good fatigue resistance. It has thermal expansion characteristics similar to steel, 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 potential applications for this resin include metal replacement, sliding vanes, aerospace parts, impellors, shrouds, pistons, and housings.

It is available in injection molding and extrusion (E) grades.

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

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.48		ASTM D792
Molding Shrinkage - Flow	0.0 to 0.15	%	ASTM D955
Water Absorption (24 hr)	0.26	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
--	16500	MPa	ASTM D638
--	22300	MPa	ASTM D1708

Mechanical	Typical Value	Unit	Test method
Tensile Strength	221	MPa	ASTM D638
Tensile Stress	203	MPa	ASTM D1708
Tensile Elongation			
Break	1.5	%	ASTM D638
Break[1]	6.0	%	ASTM D1708
Flexural Modulus			ASTM D790
23°C	19900	MPa	
232°C	15700	MPa	
Flexural Strength			ASTM D790
23°C	350	MPa	
232°C	174	MPa	
Compressive Modulus	9860	MPa	ASTM D695
Compressive Strength	254	MPa	ASTM D695

Impact	Typical Value	Unit	Test method
Notched Izod Impact	48	J/m	ASTM D256
Unnotched Izod Impact	320	J/m	ASTM D4812

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	282	°C	
Thermal Conductivity	0.52	W/m/K	ASTM C177
Coefficient of Linear Thermal Expansion	9.0E-6	cm/cm/°C	ASTM D696

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	

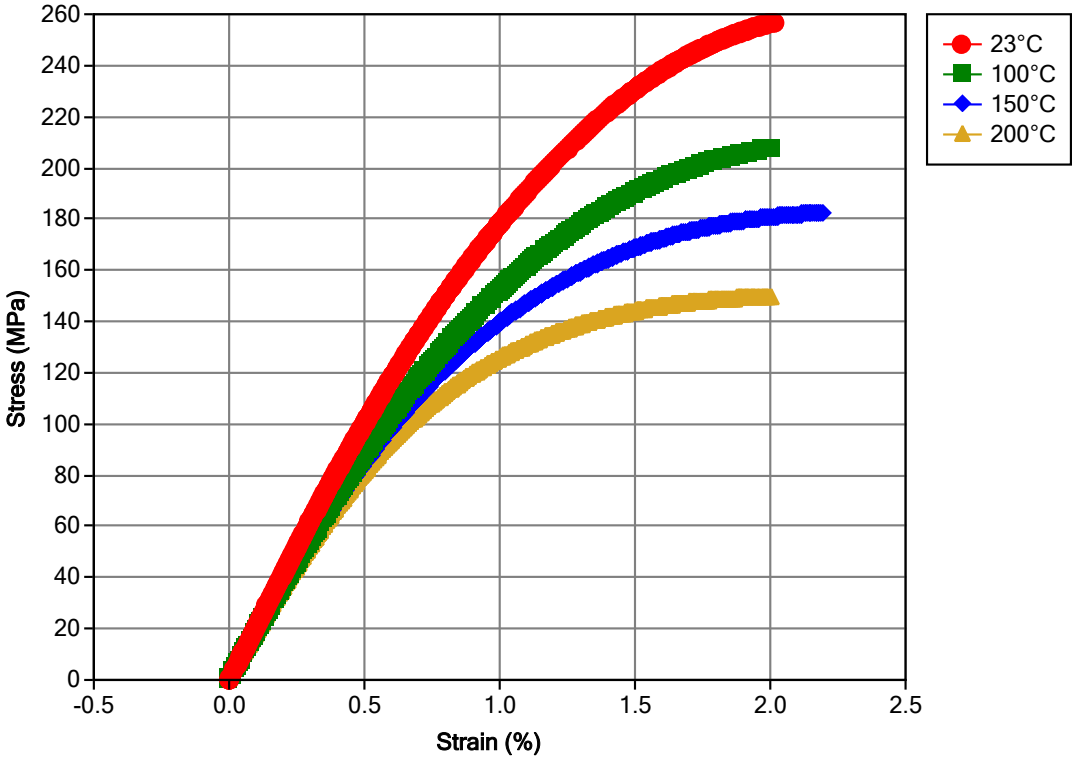
Injection Notes

Minimum drying conditions: 3 hours at 350°F (177°C), 4 hours at 300°F (149°C), or 16 hours at 250°F (121°C).
Compression Ratio: 1:1 to 1.5:1

Begin hold pressure at a high setting 6,000-8,000 psi (41.37-55.16 MPa), for several seconds, then drop off to 3,000-5,000 psi (20.69-34.48 MPa), for the duration of the hold pressure sequence.

Molded parts must be post cured.

Isothermal Stress vs. Strain (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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