



- Plastics Machining
- Spring Energized Seals
- Rotary Lip Seals

Material Data Sheet

Material: Torlon® 4501

Polyamide-Imide

Torlon® 4501 PAI is well suited for general purpose wear and friction parts. It has a higher compressive strength and can therefore carry more load than Torlon 4540. It is similar in composition to Torlon 4301 PAI, and is selected when larger shapes are required.

Mechanical Properties	Test Method ASTM	Value	Units
Specific Gravity, 73°F	D792	1.45	
Tensile Strength, 73°F	D638	10,000	psi
Tensile Modulus of Elasticity, °F	D638	440,000	psi
Tensile Elongation (at break), 73°F	D638	3	%
Flexural Strength, 73°F	D790	20,000	psi
Flexural Modulus of Elasticity, 73°F	D790	650,000	psi
Shear Strength, 73°F	D732	-	psi
Compressive Strength, 10% Deformation, 73°F	D695	16,000	psi
Compressive Modulus of Elasticity, 73°F	D695	359,000	psi
Hardness, Rockwell, Scale as noted, 73°F	D785	E70 (M106)	
Hardness, Durometer, Shore "D" Scale, 73°F	D2240	D90	
Izod Impact (notched), 73°F	D256 Type A	0.5	ft-lb/in of notch
Coefficient of Friction (Dry vs. Steel) Dynamic	QTM 55007	0.2	
Limiting PV (with 4:1 safety factor applied)	QTM 55007	22,500	ft.lbs./in. ² min
Wear Factor "k" x 10 ⁻¹⁰	QTM 55010	4.5	in. ³ -min/ft.lbs.hr
Thermal Properties			
Coefficient of Linear Thermal Expansion (-40°F to 300°F)	E-831 (TMA)	2 x 10 ⁻⁵	in/in./°F
Heat Deflection Temperature 264 psi	D648	534	°F
TG-Glass transition (amorphous)	D3418	527	°F
Meltin Point (Crystalline) peak	D3418	N/A	°F
Continuous Service Temperature in Air (Max.) (1)		500	°F
Thermal Conductivity	F433	3.7	BTU-in/hr-ft ² -°F
Electrical Properties			
Dielectric Strength, Short Term	D149	-	Volts/mil
Surface Resistivity	EOS/ESD S11.11	>10 ¹³	ohm/square
Dielectric Constant, 106 Hz	D150	6	
Dissipation Factor, 106 Hz	D150	0.042	
Flammability @ 3.1 mm (1/8 in.)	UL 94	V-0	

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*The values shown in these and the following charts are typical, average properties. Actual values may differ due to variations in resin formulations and processing methods. These values are obtained from sources believed to be reliable, including the resin manufacturers, converters and other published sources. However, they should not be used for specification or design purposes. Information above provided by Quadrant EPP