

## General Information

**Chemical Designation:** *Torlon 4301 polyamide-imide offers exceptional properties for bearing and wear components, such as a low coefficient of friction, low expansion rate, and little or not slip-stick during use. Torlon 4301 excels in severe service applications. Several manufacturers produce basic shapes commonly known by the trade names such as Duratron® PAI, and Tecator®.*

**PA (Polyamide)**

**Fillers:** *Torlon® 4301 is commonly used for severe service non-lubricated bearings, seals, bearing cages, and reciprocating compressor parts. Machined with standard machining techniques, special care must be taken however to achieve close tolerances. Please feel free to call our technical service department for details.*

**Proprietary**

**Color:**

*Black*

**Specific Gravity:**

1.45

## Technical Information

Specification	Test	Value	Units
Specific Gravity, 73°F	D792	1.45	
Tensile Strength @ Yield, 73°F	D638	15,000	psi
Tensile Modulus of Elasticity, 73°F	D638	900,000	psi
Tensile Elongation (at break), 73°F	D638	3	%
Flexural Strength, 73°F	D790	23,000	psi
Flexural Modulus of Elasticity	D790	800,000	psi
Shear Strength, 73°F	D732	16,400	psi
Compressive Strength - Ultimate			psi
Compressive Strength at 2% Deformation	D695	10,000	psi
Compressive Strength at 10% Deformation	D695	22,000	psi
Deformation Under Load			%
Compressive Modulus of Elasticity, 73°F	D695	950,000	
Compressive Strength to Laminate (Modulus)			psi
Compressive Strength to Laminate (Yield)			psi
Compressive Strength to Laminate (Ultimate)		10,000	psi
Hardness, Durometer (Shore "D" scale)	D2240		
Hardness, Rockwell (Scale as noted)	D785	M106	Rockwell M
Izod Impact, Notched @ 73°F	D256 Type A	.8	ft.lbs/in. of notch
Coefficient of Friction (Dry vs Steel) Static	PTM55007	.25	
Coefficient of Friction (Dry vs Steel) Dynamic	PTM55007	.2	
Maximum Static Bearing Load (P)	PTM55007	1,000	psi
Maximum Unlubricated No Load Bearing Velocity (V)	PTM55007	900	ft/minute
Maximum Limiting PV (Unlubricated)	PTM55007	50,000	psi x ft/min.
Wear Factor "K" x 10 <sup>-10</sup>	PTM55010	300	Cubic in.-min/ft.lbs.hr
Sand Wheel Wear/Abrasion Test			UHMW=100
Minimum Mating Surface Hardness			Rockwell (Brinnell)
Coefficient of Linear Thermal Expansion	E-831(TMA)	1.4	in/in/°F x 10 <sup>-5</sup>
Coefficient of Thermal Expansion // to Laminates	E-831(TMA)	1.4	in/in/°F x 10 <sup>-5</sup>
Coefficient of Thermal Expansion I to Laminates	E-831(TMA)	1.4	in/in/°F x 10 <sup>-5</sup>
Softening Point			°F
Heat Deflection Temperature 264 psi	D648	534	°F
Embrittlement Temperature			°F Min.
Continuous Service Temperature in Air		500	°F Max.
Short Term Service Temperature		500	°F Max.
Tg-Glass Transition (Amorphous)	D3418	527	°F
Melting Point (Crystalline Peak)	D3418	N/A	°F
Thermal Conductivity	F433	3.7	BTU-in/(hr/ft <sup>2</sup> °F)
Dielectric Strength Short Term	D149		Volts/mil
Volume Resistivity	D257		ohm/cm
Surface Resistivity	D257	>10 <sup>13</sup>	ohm/cm
Dielectric Constant, 106 Hz	D150	5.4	
Dissipation Factor, 106 Hz	D150	.037	
Flammability @ 3.1mm(1/8 in.) UL94	UL94	V-O	
Arc Resistance			seconds
Water Absorption, Immersion 24 Hours	D570 (2)	.4	%
Water Absorption, Immersion Saturation	D570 (2)	1.5	%
Machinability Rating		3	1=easy, 10=difficult
Rod Diameter Availability (Off the Shelf)	1	3.0	inches
Sheet Thickness Availability (Off the Shelf)	.25	1.00	inches
Characteristics / Attributes	Excellent Bearing and Wear Properties, High Temp, Low Expansion Rate, Self-Lubricating		

*Thank you for your interest in our materials. All statements, technical information and recommendations presented are in good faith, based upon tests believed to be reliable and practical field experience. Poly-Tech is not responsible for its accuracy or completeness. It is our recommendation and the customer's responsibility to determine the suitability of any material for any given application.*