Torlon® 4630

polyamide-imide

Torlon® 4630 is an injection-moldable, wear-resistant grade of polyamide-imide (PAI), that has been formulated to give outstanding wear resistantance in non-lubricated applications. 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.

Potential applications for Torlon® 4630 polyamide-imide include thrust washers, seal rings, sliding vanes, bobbins, bushings, clutch rollers and pistons.

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Additive	• PTFE + Graphite Lubricant		
Features	• Flame Retardant • Good Chemical Resistance • Good Creep Resistance	• Good Wear Resistance • High Heat Resistance • High Stiffness	• High Temperature Strength • Low Friction
Uses	• Automotive Applications	• Bearings	• Bushings
RoHS Compliance	• Contact Manufacturer		
Forms	• Pellets		
Processing Method	• Injection Molding	• Machining	• Profile Extrusion

Physical	Typical Value	Unit	Test method
Specific Gravity	1.56		ASTM D792
Water Absorption (24 hr)	0.18	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	7450	MPa	ASTM D638
Tensile Strength	81.4	MPa	ASTM D638
Tensile Elongation (Break)	1.9	%	ASTM D638
Flexural Modulus	6830	MPa	ASTM D790
Flexural Strength	131	MPa	ASTM D790
Compressive Strength	99.3	MPa	ASTM D695
Coefficient of Friction			
-- [1]	0.32		ASTM D3702
-- [2]	0.32		ASTM D3702
-- [3]	0.15		ASTM D1894
-- [4]	0.030		ASTM D1894

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Mechanical	Typical Value	Unit	Test method
Wear Factor			ASTM D3702
Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)	6.00	in³·min^-10/ft·lb·hr	
Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)	13.5	in³·min^-10/ft·lb·hr	
Lubricated: 0.375 m/s, 6.9 MPa (75 fpm, 1000 psi)	11.0	in³·min^-10/ft·lb·hr	
Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	1.00	in³·min^-10/ft·lb·hr	

Impact	Typical Value	Unit	Test method
Notched Izod Impact	48	J/m	ASTM D256
Unnotched Izod Impact	160	J/m	ASTM D256

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	279	°C	
Coefficient of Linear Thermal Expansion	3.6E-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 times are: 3 hours at 350°F (177°C), 4 hours at 300°F (149°C), or 16 hours at 250°F (121°C).

Compression Ratio between 1:1 and 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.

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Notes

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

[1] Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)

[2] Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)

[3] Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)

[4] Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)

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