



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 resistance 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

• South America

Additive • PTFE + Graphite Lubricant

Features • Flame Retardant • Good Wear Resistance • High Temperature Strength
 • Good Chemical Resistance • High Heat Resistance • Low Friction
 • Good Creep Resistance • High Stiffness

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	g/cm ³	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	0.15	ASTM D1894
-- 2	0.030	ASTM D1894
-- 3	0.32	ASTM D3702
-- 4	0.32	ASTM D3702

Wear Factor

Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)	6.00	in ³ ·min ⁻¹ ·10 ⁻¹¹ ·ft·lb ⁻¹ ·hr
Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)	13.5	in ³ ·min ⁻¹ ·10 ⁻¹¹ ·ft·lb ⁻¹ ·hr
Lubricated: 0.375 m/s, 6.9 MPa (75 fpm, 1000 psi)	11.0	in ³ ·min ⁻¹ ·10 ⁻¹¹ ·ft·lb ⁻¹ ·hr

Mechanical	Typical Value Unit	Test Method
Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	1.00 in ³ ·min/ ⁴ - 10/ft·lb·hr	
Impact		
Notched Izod Impact	48 J/m	ASTM D256
Unnotched Izod Impact	160 J/m	ASTM D256
Thermal		
Deflection Temperature Under Load 1.8 MPa, Unannealed	279 °C	ASTM D648
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.

Notes

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

¹ Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)

² Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)

³ Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)

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