

Solvay Specialty Polymers Torlon® 4645 Polyamide-imide (PAI) (Unverified Data**)

Category : Polymer , Thermoplastic , Polyamide-imide (PAI) , Polyamide-Imide, Extruded

Material Notes:

Torlon 4645, an injection-moldable, wear-resistant grade of polyamide-imide (PAI), has been formulated to give outstanding wear resistance in lubricated wear 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 4645 polyamide-imide include thrust washers, seal rings, sliding vanes, bobbins, bushings, clutch rollers and pistons. 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. Information provided by Solvay Specialty Polymers.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-Torlon-4645-Polyamide-imide-PAI-nbspUnverified-Data.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.57 g/cc	1.57 g/cc	ASTM D792
Water Absorption	0.25 %	0.25 %	ASTM D570
	@Time 86400 sec	@Time 24.0 hour	

Mechanical Properties	Metric	English	Comments
Tensile Strength	114 MPa	16500 psi	ASTM D638
Elongation at Break	0.80 %	0.80 %	ASTM D638
Tensile Modulus	18.6 GPa	2700 ksi	ASTM D638
Flexural Strength	154 MPa	22300 psi	ASTM D790
Flexural Modulus	12.4 GPa	1800 ksi	ASTM D790
Compressive Strength	157 MPa	22800 psi	ASTM D695
Shear Strength	60.7 MPa	8800 psi	ASTM D732
	@Temperature 150 °C	@Temperature 302 °F	
Izod Impact, Notched	85.5 MPa	12400 psi	ASTM D732
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Izod Impact, Notched	0.370 J/cm	0.693 ft-lb/in	ASTM D256
	1.10 J/cm	2.06 ft-lb/in	
Coefficient of Friction, Dynamic	0.070	0.070	Lubricated: 4 m/s, 5.2 MPa; ASTM D1894

Mechanical Properties	Metric	English	Comments
	0.090	0.090	Lubricated: 0.25 m/s, 6.9 MPa; ASTM D1894
K (wear) Factor	$0.604 \times 10^{-8} \text{ mm}^3/\text{N-M}$	$0.300 \times 10^{-10} \text{ in}^3\text{-min}/\text{ft-lb-hr}$	Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi); ASTM D3702
	$3.22 \times 10^{-8} \text{ mm}^3/\text{N-M}$	$1.60 \times 10^{-10} \text{ in}^3\text{-min}/\text{ft-lb-hr}$	Lubricated: 0.375 m/s, 6.9 MPa (75 fpm, 1000 psi); ASTM D3702

Thermal Properties	Metric	English	Comments
CTE, linear	14.0 $\mu\text{m}/\text{m-}^\circ\text{C}$	7.78 $\mu\text{in}/\text{in-}^\circ\text{F}$	ASTM D696
Deflection Temperature at 1.8 MPa (264 psi)	281 $^\circ\text{C}$	538 $^\circ\text{F}$	Unannealed; ASTM D648

Processing Properties	Metric	English	Comments
Rear Barrel Temperature	304 $^\circ\text{C}$	579 $^\circ\text{F}$	
Nozzle Temperature	371 $^\circ\text{C}$	700 $^\circ\text{F}$	
Mold Temperature	199 - 216 $^\circ\text{C}$	390 - 421 $^\circ\text{F}$	
Drying Temperature	177 $^\circ\text{C}$	351 $^\circ\text{F}$	
Dry Time	3.00 hour	3.00 hour	
Moisture Content	0.050 %	0.050 %	
Back Pressure	6.89 MPa	999 psi	
Screw Speed	50 - 100 rpm	50 - 100 rpm	

Descriptive Properties	Value	Comments
Additive	Carbon Fiber + PTFE Lubricant	
Availability	Africa & Middle East	
	Asia Pacific	
	Europe	
	North America	
	South America	
Features	Flame Retardant	
	Good Chemical Resistance	
	Good Creep Resistance	

Descriptive Properties	Value	Wear Resistance	Comments
	High Heat Resistance		
	High Stiffness		
	High Temperature Strength		
	Low Friction		
	Self Lubricating		
	Semi Conductive		
Forms	Pellets		
Generic	PAI		
Processing Method	Injection Molding		
	Machining		
	Profile Extrusion		
Screw L/D Ratio	18.0:1.0 to 24.0:1.0		
Uses	Automotive Applications		
	Bearings		
	Bobbins		
	Bushings		
	Seals		
	Thrust Washer		

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