Torlon® 4645

polyamide-imide

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.

General

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

Physical	Typical Value	Unit	Test method
Specific Gravity	1.57		ASTM D792
Water Absorption (24 hr)	0.25	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	18600	MPa	ASTM D638
Tensile Strength	114	MPa	ASTM D638
Tensile Elongation (Break)	0.80	%	ASTM D638
Flexural Modulus	12400	MPa	ASTM D790
Flexural Strength	154	MPa	ASTM D790
Compressive Strength	157	MPa	ASTM D695
Shear Strength			ASTM D732
23°C	85.5	MPa	
150°C	60.7	MPa	
Coefficient of Friction			ASTM D1894
-- [1]	0.090		
-- [2]	0.070		

Torlon® 4645
polyamide-imide

Mechanical	Typical Value	Unit	Test method
Wear Factor			ASTM D3702
Lubricated: 0.375 m/s, 6.9 MPa (75 fpm, 1000 psi)	1.60	in³·min^-10/ft·lb·hr	
Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	0.300	in³·min^-10/ft·lb·hr	

Impact	Typical Value	Unit	Test method
Notched Izod Impact	37	J/m	ASTM D256
Unnotched Izod Impact	110	J/m	ASTM D256

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	281	°C	
Coefficient of Linear Thermal Expansion	1.4E-5	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.

Torlon® 4645
polyamide-imide

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)

www.solvay.com

SpecialtyPolymers.EMEA@solvay.com | Europe, Middle East and Africa
SpecialtyPolymers.Americas@solvay.com | Americas
SpecialtyPolymers.Asia@solvay.com | Asia and Australia

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

SOLVAY
asking more from chemistry®