

Solvay Specialty Polymers Torlon® 4301 Polyamide-imide (PAI) (Unverified Data)**

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

Material Notes:

Torlon 4301 is a wear-resistant grade of polyamide-imide (PAI) resin. It has a good balance of mechanical properties and wear resistance. It offers high flexural and compressive strength with a low coefficient of friction and outstanding wear resistance at both high velocity and high pressure conditions. 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 4301 polyamide-imide include thrust washers, spline liners, valve seats, bushings, bearings, wear rings, cams and other applications requiring strength at high temperature and resistance to wear.

Injection Molding Grades: - High Flow: Torlon 4301 HF - Low Flow: Torlon 4301 LF - Low Flow Small Pellets: Torlon 4301 LFSP Extrusion Grades: - High Flow: Torlon 4301-EXT - Higher Flow: Torlon 4301-HQ

Injection Notes: Minimum drying conditions: 3 hours at 350°F (177°C), 4 hours at 300°F (149°C), or 16 hours at 250°F (121°C). Compression Ratio: 1:1 to 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-4301-Polyamide-imide-PAI-nbspUnverified-Data.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.46 g/cc	1.46 g/cc	ASTM D792
Water Absorption	0.28 %	0.28 %	ASTM D570
	@Time 86400 sec	@Time 24.0 hour	
Linear Mold Shrinkage, Flow	0.0035 - 0.0060 cm/cm	0.0035 - 0.0060 in/in	ASTM D955

Mechanical Properties	Metric	English	Comments
Tensile Strength	113 MPa	16400 psi	ASTM D638
Tensile Stress	163 MPa	23600 psi	ASTM D1708
Elongation at Break	3.3 %	3.3 %	ASTM D638
	7.0 %	7.0 %	ASTM D1708
Tensile Modulus	6.55 GPa	950 ksi	ASTM D1708
	6.83 GPa	991 ksi	ASTM D638
Flexural Strength	112 MPa	16200 psi	ASTM D790
	@Temperature 232 °C	@Temperature 450 °F	
	215 MPa	31200 psi	ASTM D790
	@Temperature 23.0 °C	@Temperature 73.4 °F	

Mechanical Properties	Metric	English	Comments
Flexural Modulus	@Temperature 232 °C	@Temperature 450 °F	ASTM D790
	6.89 GPa	999 ksi	ASTM D790
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Compressive Strength	166 MPa	24100 psi	ASTM D695
Compressive Modulus	5.31 GPa	770 ksi	ASTM D695
Izod Impact, Notched	0.640 J/cm	1.20 ft-lb/in	ASTM D256
	4.10 J/cm	7.68 ft-lb/in	ASTM D256
Coefficient of Friction, Dynamic	0.030	0.030	Lubricated: 4 m/s, 5.2 MPa; ASTM D3702
	0.18	0.18	Lubricated: 0.25 m/s, 6.9 MPa; ASTM D3702
	0.31	0.31	Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi); ASTM D3702
	0.39	0.39	Dry: 4 m/s, 0.2 MPa, (800 fpm, 31.25 psi); ASTM D3702
K (wear) Factor	0.806 x 10 ⁻⁸ mm ³ /N-M	0.400 x 10 ⁻¹⁰ in ³ -min/ft-lb-hr	Lubricated: 4 m/s, 5.2 MPa (800 fpm, 750 psi); ASTM D3702
	18.1 x 10 ⁻⁸ mm ³ /N-M	9.00 x 10 ⁻¹⁰ in ³ -min/ft-lb-hr	Lubricated: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi); ASTM D3702
	28.2 x 10 ⁻⁸ mm ³ /N-M	14.0 x 10 ⁻¹⁰ in ³ -min/ft-lb-hr	Dry: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi); ASTM D3702
	34.2 x 10 ⁻⁸ mm ³ /N-M	17.0 x 10 ⁻¹⁰ in ³ -min/ft-lb-hr	Dry: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi); ASTM D3702

Thermal Properties	Metric	English	Comments
CTE, linear	25.0 µm/m-°C	13.9 µin/in-°F	ASTM D696
Thermal Conductivity	0.530 W/m-K	3.68 BTU-in/hr-ft ² -°F	ASTM C177
Deflection Temperature at 1.8 MPa (264 psi)	279 °C	534 °F	Unannealed; ASTM D648

Electrical Properties	Metric	English	Comments
Volume Resistivity	8.00e+15 ohm-cm	8.00e+15 ohm-cm	ASTM D257
Surface Resistance	8.00e+17 ohm	8.00e+17 ohm	ASTM D257

Processing Properties	Metric	English	Comments
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Processing Properties	Metric	English	Comments
Nozzle Temperature	371 °C	700 °F	
Mold Temperature	199 - 216 °C	390 - 421 °F	
Drying Temperature	177 °C	351 °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	PTFE + Graphite Lubricant	
Automotive Specifications	BOSCH N28 BN05-OX2 N28 BN05-OX2, BN0512-CDSX-0Cgr01SO	Material should be Tempered (Cured).
Availability	Africa & Middle East	
	Asia Pacific	
	Europe	
	North America	
	South America	
Features	Flame Retardant	
	Good Chemical Resistance	
	Good Creep Resistance	
	Good Wear Resistance	
	High Heat Resistance	
	High Temperature Strength	
	Low Friction	
	Self Lubricating	
	Semi Conductive	
Forms	Pellets	
Generic	PAI	

Descriptive Properties	Value on Molding	Comments
	Machining	
	Profile Extrusion	
RoHS Compliance	RoHS Compliant	
Screw L/D Ratio	18.0:1.0 to 24.0:1.0	
Uses	Aerospace Applications	
	Aircraft Applications	
	Automotive Applications	
	Bearings	
	Bushings	
	Cams	
	Gears	
	Industrial Applications	
	Industrial Parts	
	Machine/Mechanical Parts	
	Metal Replacement	
	Oil/Gas Applications	
	Rollers	
	Sealing Devices	
	Seals	
	Thrust Washer	
	Transmission Applications	
	Washer	

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