Torlon® 4301

Polyamide-imide

Solvay Specialty Polymers

Message:

Torlon 4301 is a wear-resistant polyamide-imide (PAI) resin. A good balance has been achieved between mechanical properties and wear resistance. It has high flexural strength and compressive strength, low friction coefficient and excellent wear resistance under high flow rate and high pressure conditions. Torlon PAI has the highest strength and rigidity among all thermoplastic resins that can withstand high temperatures of 275 °C(525 °F). And has excellent wear resistance, creep resistance and chemical resistance. Torlon 4301 polyamide-imide can be used in thrust washers, spline liners, valve seats, bushings, bearings, wear rings, cams and other products that need to maintain strength and wear resistance under high temperature conditions. Injection molding grade:
High flow: Torlon 4301 HF
low flow: Torlon 4301 LF
low flow small particles: Torlon 4301 LFSP
Extrusion level:
High flow: Torlon 4301-EXT
Higher flow: Torlon 4301-HQ

General Information	
Additive	PTFE graphite lubricant
Features	Semi-conductive
	Low friction coefficient
	High temperature strength
	Good creep resistance
	Good chemical resistance
	Good wear resistance
	Heat resistance, high
	Self-lubricating
	Flame retardancy
Uses	Bushing
	Gear
	Transfer application
	Washer
	Aircraft applications
	Industrial components
	Industrial application
	Roller
	Aerospace applications
	Machine/mechanical parts
	Metal substitution
	Seals
	Sealing device
	Application in Automobile Field
	Oil/Gas Supplies

	Cam
	Thrust washer
	Bearing

RoHS Compliance	RoHS compliance
Forms	Particle
Processing Method	Machining
	Profile extrusion molding
	Injection molding

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.46	g/cm³	ASTM D792
Molding Shrinkage - Flow	0.35 - 0.60	%	ASTM D955
Water Absorption (24 hr)	0.28	%	ASTM D570
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus			
-- [1]	6550	MPa	ASTM D1708
--	6830	MPa	ASTM D638
Tensile Strength	113	MPa	ASTM D638
Tensile Stress [2]	163	MPa	ASTM D1708
Tensile Elongation			
Fracture [3]	7.0	%	ASTM D1708
Fracture	3.3	%	ASTM D638
Flexural Modulus			ASTM D790
23°C	6890	MPa	ASTM D790
232°C	4960	MPa	ASTM D790
Flexural Strength			ASTM D790
23°C	215	MPa	ASTM D790
232°C	112	MPa	ASTM D790
Compressive Modulus	5310	MPa	ASTM D695
Compressive Strength	166	MPa	ASTM D695
Coefficient of Friction			ASTM D3702
-- [4]	0.18		ASTM D3702
-- [5]	0.030		ASTM D3702
-- [6]	0.31		ASTM D3702
-- [7]	0.39		ASTM D3702
Wear Factor			ASTM D3702
Drying: 4 m/s, 0.2 MPa (800 fpm, 31.25 psi)	17.0	in³·min^-10/ft·lb·hr	ASTM D3702
Drying: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)	14.0	in³·min^-10/ft·lb·hr	ASTM D3702
Lubrication: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)	9.00	in³·min^-10/ft·lb·hr	ASTM D3702

Lubrication: 4 m/s, 5.2 MPa (800 fpm, 750 psi)	0.400	in³·min^-10/ft·lb·hr	ASTM D3702
Coefficient of Linear Thermal Expansion	2.5E-5	cm/cm/°C	ASTM D696
Impact	**Nominal Value**	**Unit**	**Test Method**
Notched Izod Impact	64	J/m	ASTM D256
Unnotched Izod Impact	410	J/m	ASTM D256
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load (1.8 MPa, Unannealed)	279	°C	ASTM D648
Thermal Conductivity	0.53	W/m/K	ASTM C177
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	8.0E+17	ohms	ASTM D257
Volume Resistivity	8.0E+15	ohms·cm	ASTM D257
Injection	**Nominal 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 - 216	°C	
Back Pressure	6.89	MPa	
Screw Speed	50 - 100	rpm	
Screw L/D Ratio	18.0:1.0 - 24.0:1.0		

Injection instructions

最低干燥条件:350 °F (177 ° C)温度下3小时, 300 °F (149°C)温度下4小时,或250 °F (121 °C)温度下16小时. 压缩比:1:1~1.5:1
开始时,压力保持在较高的设定值6,000-8,000 psi(41.37-55.16MPa) ,几秒钟后,降至~3,000-5,000psi(20.69-34.48MPa) ,进行保压. 成型部件需进行后固化.

NOTE

1.	Previously, ASTM standard test method D1708 was used to measure the tensile properties of PAI and similar materials because small samples can save materials. The most widely used now is the ASTM D638 1 Bar specimen. The D1708 value contained is only used as a historical reference and is not used for comparison with the D638 value.
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4.	Lubrication: 0.25 m/s, 6.9 MPa (75 fpm, 1000 psi)
5.	Lubrication: 4 m/s, 5.2 MPa (800 fpm, 750 psi)
6.	Drying: 0.25 m/s, 3.4 MPa (50 fpm, 500 psi)
7.	Drying: 4 m/s, 0.2 MPa, (800 fpm, 31.25 psi)

Recommended distributors for this material

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