Material Data Sheet

TORLON® 4501

Chem. Designation: POLYAMIDIMID

DIN-Abbreviation: PAI 4501

Properties		Value	Unit	ISO/IEC
Density		1,45 / -		
Water absorption, relative 1)		0,21 / -	%	62
- at saturation in air of 23°C, 50% RF		1,9 / -	%	
- at saturation in water of 23°C		3,8 / -	%	
Thermal Properties		**Value**	**Unit**	**ISO/IEC**
Glass transition temperature		280 / -	°C	–
Thermal conductivity (23º C)		0,54 / -	W/(k·m)	–
Coefficient of thermal expansion: - average value between 23 and 100°C		25 · 10^–6 / -	m/(m·K)	–
Coefficient of thermal expansion: - average value between 23 and 150°C		25 · 10^–6 / -	m/(m·K)	–
Coefficient of thermal expansion: - average value above 150°C		25 · 10^–6 / -	m/(m·K)	–
Temperature of deflection under load - Method a: 1,8 MPa		280 / -	°C	75
Max. service temperature in air: -short perods 2		270 / -	°C	–
Max. service temperature in air: -continously: for min. 5000/20.000 h		- / 250	°C	–
Minimum service temperature		-20 / -	°C	–
Flammability acc. to ASTM („Oxygen index“)		44 / -	%	4589
Flammability acc. to UL standard 94 (thickness 3mm/6mm)		V0 / V0		–
Mechanical Properties (at 23°C)		**Value**	**Unit**	**ISO/IEC**
Tensile strength at yield/Tensile strength at break	dry	- / 110	MPa	527-1/-2
Tensile strength	dry	110 / -	MPa	527-1/-2
Elongation at break	dry	5 / -	%	527-1/-2
Modulus of elasticity in tension	dry	5500 / -	MPa	527-1/-2
Compression Test - 1% nominal strain	dry	39 / -	MPa	604
impact-strength - Charpy unnotched	dry	45 / -	kj/m²	179/1eU
impact-strength Charpy notched	dry	4 / -	kj/m²	179/1eA
Ball identation hardness H 358 / 30 or H 961 / 30	dry	200 / -	N/mm²	2039-1
Hardness, Rockwell	dry	M106 / -		2039-2
Coefficient of Friction 4)	dry	0,25 / 0,4	µ	
Electrical Properties		**Value**	**Unit**	**ISO/IEC**
Volume resistivity	dry	10^13 / -	Ohm·cm	60093
Surface resistivity	dry	10^13 / -	Ohm	60093
Dielectric constant at 100 Hz	dry	6 / -		60250
Dielectric constant at 1 MHz	dry	5,4 / -		60250
Dielectric dissipation factor tan δ at100 H	dry	0,037 / -		60250
Dielectric dissipation factor tan δ at 1 MHz	dry	0,042 / -		60250

dry = values referring to dry materials
moist = values referring to material in equilibrium with = the standard atmosphere 23°C/50% RH
o.B. = no break

1) after 24/96h immersion in water of 23°C
2) only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material
3) stress to produce 1% strain in 1000 h (s 1/1000)
4) p = 0,05 N/mm2, v= 0,6 m/s surface roughness C35 steel mating surface Ra 0,7 - 0,9

This table is a valuable help in the choice of material. The data listed here fall within the normal range of product properties. However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design. It has to be noted that fibre reinforced material shows an anisotropic behaviour (properties differ when measured parallel and perpendicular to be extrusion direction).