

PA 6

Chem. Designation: Polyamid

DIN-Abbreviation: PA 6

Properties	Value	Unit	ISO/IEC
Density	1,14 / -		
Water absorption absolutely 1)	86 / 168	mg	62
Water absorption, relative 1)	1,28 / 2,5	%	62
- at saturation in air of 23°C, 50% RF	2,6 / -	%	
- at saturation in water of 23°C	9 / -	%	

Thermal Properties	Value	Unit	ISO/IEC
Crystalline melting point	220 / -	°C	-
Thermal conductivity (23° C)	0,28 / -	W/(k·m)	-
Coefficient of thermal expansion: - average value between 23 and 60°C	90 · 10 ⁻⁶ / -	m/(m·K)	-
Coefficient of thermal expansion: - average value between 23 and 100°C	105 · 10 ⁻⁶ / -	m/(m·K)	-
Temperature of deflection under load - Method a: 1,8 MPa	70 / -	°C	75
Max. service temperature in air: -short periods 2	160 / -	°C	-
Max. service temperature in air: -continously: for min. 5000/20.000 h	85 / 70	°C	-
Minimum service temperature	-40 / -	°C	-
Flammability acc. to ASTM („Oxygen index“)	25 / -	%	4589
Flammability acc. to UL standard 94 (thickness 3mm/6mm)	HB / HB		-

Mechanical Properties (at 23°C)	Value	Unit	ISO/IEC
Tensile strength at yield/Tensile strength at break	dry 76 / -	MPa	527-1/-2
Tensile strength at yield/Tensile strength at break	moist 45 / -	MPa	527-1/-2
Elongation at break	dry >50 / -	%	527-1/-2
Elongation at break	moist >100 / -	%	527-1/-2
Modulus of elasticity in tension	dry 3250 / -	MPa	527-1/-2
Modulus of elasticity in tension	moist 1400 / -	MPa	527-1/-2
Compression Test - 1% nominal strain	dry 24 / -	MPa	604
Tensile creep 3)	dry 18 / -	MPa	899
Tensile creep 3)	moist 7 / -	MPa	899
impact-strength - Charpy unnotched	dry o.B. / -	kJ/m ²	179/1eU
impact-strength Charpy notched	dry 5,5 / -	kJ/m ²	179/1eA
impact-strength Izod	dry 5,5 / 55	kJ/m ² ; J/m	180/2A
impact-strength Izod	moist 15 / 150	kJ/m ² ; J/m	180/A
Ball indentation hardness H 358 / 30 or H 961 / 30	dry 150 / -	N/mm ²	2039-1
Hardness, Rockwell	dry M85 / -		2039-2
Coefficient of Friction 4)	dry 0,38 / 0,45	μ	

Electrical Properties	Value	Unit	ISO/IEC
Dielectric strength	dry 25 / -	kV/mm	60243
Dielectric strength	moist 16 / -	kV/mm	60243
Volume resistivity	dry 10 ¹⁴ / -	Ohm·cm	60093
Volume resistivity	moist 10 ¹² / -	Ohm·cm	60093
Surface resistivity	dry 10 ¹³ / -	Ohm	60093
Surface resistivity	moist 10 ¹² / -	Ohm	60093
Dielectric constant at 100 Hz	dry 3,9 / -		60250
Dielectric constant at 100 Hz	moist 7,4 / -		60250
Dielectric constant at 1 MHz	dry 3,3 / -		60250
Dielectric constant at 1 MHz	moist 3,8 / -		60250
Dielectric dissipation factor tan δ at 100 H	dry 0,019 / -		60250

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Dielectric dissipation factor $\tan \delta$ at 100 Hz	moist	0,13 / -		60250
Dielectric dissipation factor $\tan \delta$ at 1 MHz	dry	0,021 / -		60250
Dielectric dissipation factor $\tan \delta$ at 1 MHz	moist	0,06 / -		60250
Comparative tracking index (CTI)	dry	CTI 600 / -	CTI	60112
Comparative tracking index (CTI)	moist	CTI 600 / -		60112

dry	= values referring to dry materials	1) after 24/96h immersion in water of 23°C
moist	= values referring to material in equilibrium with	2) only for short time exposure (a few hours) in applications where no or only a very
	= the standard atmosphere 23°C/50% RH	low load is applied to the material
o.B.	= no break	3) stress to produce 1% strain in 1000 h ($\leq 1/1000$)
		4) $p = 0,05 \text{ N/mm}^2$, $v = 0,6 \text{ m/s}$ 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).