

Connector Technical Data

MATERIALS

PA (Polyamides)

Polyamides are high-impact, very tough thermoplastics which exhibit very good electrical insulation characteristics, favorable tracking characteristics and resistance to flashover. The greater the proportion of filling agents, the less the water absorption and the better the dimensional stability. Their specific surface resistance, due to humidity absorption, is somewhat less than for other plastics, but there is the advantage that this reduces the tendency for a build up of electrostatic charge and thus the tendency for PA components to attract dust is avoided.

These characteristics mean that polyamides are suitable for production of casings for electrical plant. (Typical application: high voltage modules, plastic frame grips)

PC (Polycarbonate)

Polycarbonate is an amorphous thermoplastic. It is distinguished by high strength, viscosity, hardness, rigidity

and good resistance to heat and cold in relation to its form, and good electrical characteristics. PC is a glass-clear, easily dyed plastic with very low water absorption, and exhibits high dimensional precision, low waste and good processability. (Typical applications: inserts/ insulators, frames and individual modules for modular system)

PBT (Polybutylenterephthalate)

Polybutylenterephthalate is a thermoplastic polyester and is distinguished by its high rigidity, high stability of form under heat, low creep, low water absorption of <0.2%, high dimensional stability and good to very good electrical characteristics. It is a tough viscous plastic with high abrasion resistance, high dimensional stability and long-term strength combined with good slip and wear characteristics. (Typical application: insert/ insulators)

Chemical Resistance of Plastics

Diluted acid	PA 6 GF	PA 66 GF	PC GF	PBT GF
Acetone	+	+	+	+
Aqueous ammoniac	+	+	·	+
Benzene	+	+	+	+
Benzol	+	+	+	+
Diesel oil	+	+	·	+
Concentrated acetic acid	+	+	+	+
Alkaline potassium	·	·	·	°
Methanol	·	·	·	+
Engine Oil	°	°	·	+
Diluted alkalis	+	+	+	+
Chlorhydrocarbons	+	+	·	+
Outdoor exposure	+	+	·	°
Cold water/ seawater	+	+	°	+

+ = resistant; ° = conditionally resistant; · = non-resistant

Electrical, thermal and mechanical values

Electrical Values	Unit	PA 6 GF	PA 66 GF	PC GF	PBT GF
Flash over resistance (DIN 53481; VDE 0303)	Ed * KV/mm	80/40	>80/40	35	100
Tracking current resistance (DIN 53480; VDE 0303)	CTI	>500	>500	>125 to 250	>500

Thermal values

Temperature limit for short-term application	°C	180	200	165	190
Temperature limit for long-term application	°C	105	120	130	140

Mechanical values

Density (DIN 53479)	g/ cm ³	1.35	1.35	1.34	1.53
Modulus of elasticity in the flexional and tensile test (DIN 53457)	EZ* MPa	8500/ 6000	9700/7500	6000	10000
Absorption of humidity in NK until occurrence of saturation (DIN 5714)	%	2.1	1.5	0.13	0.13

* Numerical information relates to both dry and atmospherically humid conditions

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SEALING MATERIALS

NBR (ex. Perbunan)

Synthetic rubber used for parts with high resistance to fuels, oil, fat and aliphatic solvents at high temperatures. The durability of the material can be carried by the compounds used during manufacture, to protect against ozone or the prevailing environmental conditions.

O-Rings are used in various applications ex. electrical and automotive industry, hydraulics, mechanical engineering, oil industry for membranes, fuel hoses, seals, formed items, plate gaskets, etc.

Typical applications: Seals and gaskets for rectangular connectors and glands.

FPM (ex. Viton)

This fluoroelastomer is commonly used for rubber parts and withstands fuel, oil, lubricants, many acids and chemicals during extreme thermal stress. Viton also has good mechanical qualities, flame resistance and high durability against ozone and environmental impacts of every kind.

Typical application: Seal in circular connector type A and glands.

CHEMICAL, THERMAL & MECHANICAL VALUES

Abbreviation	NBR	FPM
Commercial Name	Perbunan N Hycar	Viton/ Fluorel
Shore A hardness range at standard solid quality tolerance $\pm 5^\circ$ Shore approx	25 to 40	60 to 90
Tear strength N/ mm ² bei +20°C to	Approx 20	Approx 17
General weather-resistance	good	excellent
Ozone resistance	satisfactory	excellent
Resistance to oil	excellent	excellent
Resistance to fuel	good	excellent
Resistance to solvent	partially good	very good
General resistance to acids	satisfactory	very good
Temperature resistance:		
a) Short-term: prox	-40°C to 150°C	-30°C to 280°C
b) Long-term: prox	-30°C to 120°C	-20°C to 230° C
Vapor resistance	good	satisfactory to good
Can be supplied in food packaging products	yes	no