

What is PC GF20 natural

PC GF20 natural

PC, glass-fibre reinforced 20 %

PC GF20 natural is a polycarbonate reinforced with 20 % glass fibres. The reinforcement significantly increases stiffness, strength and heat deflection temperature compared to unreinforced PC and reduces thermal expansion – with the low moisture absorption and flame retardancy (UL 94 V0) typical of polycarbonate.

Properties

PC GF20 natural is an amorphous thermoplastic with embedded short glass fibres. The fibres increase tensile modulus and yield stress, improve dimensional stability and raise the heat deflection temperature to 138 °C. The material is flame retardant and self-extinguishing and retains its good electrical insulating properties.

The glass fibres reduce the high impact strength typical of PC; the material is more brittle than unreinforced PC and the fibres are abrasive to tools.

Advantages

- Higher stiffness and strength than unreinforced PC
- High heat deflection temperature (HDT 138 °C)
- Flame retardant (UL 94 V0), electrically insulating
- Low moisture absorption, good dimensional stability

Disadvantages

- Lower impact strength and elongation at break than unreinforced PC
- Glass fibres are abrasive to tools
- Sensitive to stress cracking in contact with solvents and alkalis
- Not generally declared for food contact (see FDA declaration)

Processing

PC GF20 natural can be machined using all conventional cutting methods. Because of the abrasive glass fibres, carbide tools are recommended; sharp cutting edges and good cooling via chip removal avoid softening or smearing of the surface caused by heat build-up.

Glass-fibre-containing dust generated during machining should be extracted. Cooling lubricants must be compatible with PC (risk of stress cracking); for tight tolerances we recommend intermediate annealing.

Typical Applications

PC GF20 natural is used wherever stiff, dimensionally stable and flame-retardant components are required – for example in the electrical industry and in mechanical engineering.

- Housing and support parts with UL 94 V0 requirement
- Insulating and cover parts in electrical engineering
- Dimensionally stable functional and structural parts

Typical Properties

- Higher stiffness and heat deflection temperature than unreinforced PC
- Flame retardant (UL 94 V0)
- Low moisture absorption

Product Examples

- Housing and support parts
- Insulating and cover parts
- Structural parts

Typical Industries

- Electrical Industry
- Mechanical Engineering

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.33
Water absorption	DIN EN ISO 62	%	0.20
Flammability (Thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	85
Elongation at break	DIN EN ISO 527	%	5
Tensile modulus of elasticity	DIN EN ISO 527	MPa	3.800
Notched impact strength	DIN EN ISO 179	kJ / m ²	8.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	180
Shore hardness	DIN EN ISO 868	scale D	85
Thermal Properties			
Thermal conductivity	DIN 52612-1	W / (m * K)	0.22
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	30
Service temperature, long term	Average	°C	-30 ... 120
Service temperature, short term (max.)	Average	°C	140
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	138