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What is EP GC 308

EP GC 308

EP GC 308 acc. to EN 60893 – high-temperature special grade of the epoxy/glass-fabric series (180 °C class), glass-fabric reinforced epoxy resin laminate

EP GC 308 is the high-temperature special grade of the epoxy/glass-fabric laminate series to EN 60893 for apparatus, electrical and transformer engineering at an elevated continuous-use temperature (temperature index 180).

CLASSIFICATION AND BASIC CHARACTER

EP GC 308 belongs to the family of glass-fabric laminates: layers of glass fabric are impregnated with an epoxy resin specially formulated for higher continuous temperatures and pressed under heat and pressure into sheets, rods or tubes. The colour is characteristically brown. A reliable assignment to a DIN 7735 Hgw short designation is not established for this grade; EP GC 308 is therefore listed here exclusively under its EN 60893 designation.

Within the epoxy/glass-fabric series, EP GC 308 is rated for continuous-use temperatures well above the standard grade (around 130 °C) and also above the 155 °C class: the temperature index acc. to IEC 60216-1 is 180, achieved through an adapted resin formulation that at the same time enables higher mechanical strength values.

HOW EP GC 308 IS MADE AND MACHINED

EP GC 308 is produced by pressing epoxy-impregnated glass fabric layers into sheets, rods or tubes. We machine precision parts from these semi-finished products – sawing, milling, drilling and turning are carried out with sharp, carbide-tipped or diamond-coated tools, with increased tool wear from the glass fabric to be expected. Adequate dust extraction must be ensured during machining.

MECHANICAL, ELECTRICAL AND THERMAL PROPERTIES

EP GC 308 achieves typical values of around 630 MPa flexural strength, 370 MPa tensile strength and 330 MPa compressive strength, with a modulus of elasticity of around 31,000 MPa. Electrically, the material offers a comparative tracking index of CTI 200-250 and an electric strength of 90 kV (∥) resp. 70 kV (⊥); the temperature limit reaches into the 180 °C class (temperature index 180).

WHEN EP GC 308 IS THE RIGHT CHOICE

- Apparatus, electrical and transformer engineering with elevated operating temperature
- Insulating parts in the immediate vicinity of heat sources
- Applications where the 130 °C or 155 °C class is thermally insufficient

WHEN EP GC 308 IS NOT THE RIGHT CHOICE

- Direct food contact – EP GC 308 is not declared for this
- Pure cost optimisation without an elevated temperature requirement – EP GC 202 or EP GC 203 is sufficient here
- Forming or welding – not possible as a thermoset
- Applications requiring a documented DIN 7735 Hgw assignment – this is not reliably established here

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COSTS AND MACHINING AT LIEDTKE

Due to the special high-temperature resin formulation, EP GC 308 is priced above the standard and 155 °C grades of the series. The component price is determined mainly by sheet thickness, dimensions, material utilisation, machining effort and batch size – we are glad to provide binding prices on request based on your drawing. During machining we ensure adequate dust extraction and allow for the increased tool wear caused by the glass fabric, reliably manufacturing high-strength, high-temperature-resistant insulating parts from single items to series production.

ADVANTAGES AND DISADVANTAGES AT A GLANCE

An honest assessment – and how the disadvantages can be mitigated in practice:

Advantages

- Very high mechanical strength
- High-temperature special grade (temperature index 180)
- Very good electrical insulation properties

Disadvantages

- Not declared for direct food contact
- Higher tool wear during machining (glass fabric)
- Higher price than standard and 155 °C grades of the series

Practical tip: EP GC 308 is the right choice for continuous-use temperatures up to 180 °C. If 130 °C or 155 °C is sufficient, EP GC 202 resp. EP GC 203 are the more economical choice.

Typical Properties

- Very high mechanical strength
- High-temperature special grade (temperature index 180)
- Low water absorption
- Very good electrical insulation properties
- Thermoset laminate (dimensionally stable)
- Colour brown

Product Examples

- Apparatus components with elevated operating temperature
- Transformer and electrical components
- High-strength insulating parts at elevated temperature
- Components near heat sources

Typical Industries

- Apparatus engineering
- Electrical engineering and switchgear construction (medium voltage)
- Transformer manufacturing
- Mechanical and plant engineering (high-strength insulating parts at elevated temperature)
- Jig, fixture and tool making
- Test and measurement engineering

	Test Method	Unit	Value
Mechanical Properties			
Flexural strength	DIN 53452	MPa	630 (DIN 7735: 350)
Flexural strength at elevated temperature	DIN 53452	MPa	458 (DIN 7735: 175)
Tensile strength	DIN 53455	MPa	370 (DIN 7735: 220)
Compressive strength	DIN 53454	MPa	330 (DIN 7735: 150)
Impact strength	DIN 53453	kJ / m²	219 (DIN 7735: 100)

	Test Method	Unit	Value
Notched impact strength	DIN 53453	kJ / m²	65 (DIN 7735: 50)
Bond strength (splitting force)	DIN 53463	N	4100 (DIN 7735: 3000)
Modulus of elasticity	DIN 53452	MPa	$31 \cdot 10^3$ (DIN 7735: $18 \cdot 10^3$)
Electrical Properties			
Surface resistivity	DIN 53482	Ω	10^{12} (DIN 7735: $5 \cdot 10^{10}$)
Electric strength ∥ / ⊥	DIN 53481	kV	90 / 70 (DIN 7735: 40 / 40)
Dielectric dissipation factor (1 MHz)	DIN 53483		0.03 (DIN 7735: 0.05)
Dielectric constant	DIN 53483		4 (DIN 7735: 5)
Comparative tracking index CTI	IEC 60112		250 (DIN 7735: 200)
Electrolytic corrosion (tracking)	DIN 53489		AN 1.2 (DIN 7735: AN 1.4)
Thermal Properties			
Temperature limit / TI	VDE 0304 / IEC 60216	°C	155/180
Thermal conductivity ∥ / ⊥	DIN 52612	W / (m·K)	0.3 / 0.25
Coefficient of linear expansion ∥ / ⊥	VDE 0304	10^{-6} / K	10-20 / 15
Thermal class	VDE 0534		F / H
General Properties			
Density	DIN 53479	g / cm³	1.7-1.9 (typical 1.86)
Water absorption (5 mm thickness)	DIN 53495	mg	14 (DIN 7735: 30)
Glow resistance	DIN 53459		2a
Colour			brown

EP GC 308 (acc. to EN 60893) is a high-temperature special grade of the epoxy/glass-fabric series; a reliable DIN 7735 Hgw assignment is not established and is not claimed. The values are typical, researched figures, serve as an aid to material selection and are not a legally binding assurance. EP GC 308 is not declared for direct food contact.

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