

What is EP GC 205

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Glass-roving-fabric-reinforced epoxy resin with very good mechanical and dielectric properties at an elevated limiting temperature

EP GC 205 (Hgw 2370.4 acc. to DIN 7735) is a glass-roving-fabric-reinforced epoxy-resin laminate that combines very good mechanical and dielectric properties with a limiting temperature of 155 °C (thermal class F) that is significantly higher than standard grades.

Classification and Basic Character

EP GC 205 belongs to the family of glass-fabric laminates (industrial laminates): glass-roving-fabric layers are impregnated with epoxy resin and pressed under heat and pressure into sheets, round bars or tubes. The roving fabric used differs from finer glass fabrics through coarser, high-strength glass-fibre strands, which contributes to very good mechanical and dielectric values. The colour is green.

What Distinguishes EP GC 205 from Standard Glass-Fabric Laminates

The key difference from standard grades such as EP GC 201 or EP GC 202 (Hgw 2372.1, "FR-4") lies in the significantly higher limiting temperature of 155 °C (thermal class F instead of B). This makes EP GC 205 suitable for applications with continuously elevated operating temperatures, while mechanical and dielectric base properties remain at a high level.

How EP GC 205 is Manufactured and Processed

EP GC 205 is produced by pressing epoxy-resin-impregnated glass-roving-fabric layers into sheets, round bars or tubes. From these semi-finished products we machine precision parts – sawing, milling, drilling and turning produce clean results with sharp, carbide-tipped or diamond-coated tools, allowing for higher tool wear than with cotton-fabric laminates due to the glass fabric. Adequate dust extraction should be ensured during machining (resin/glass fibre dust).

Mechanical, Electrical and Thermal Properties

EP GC 205 achieves typical values of around 350 MPa flexural strength, around 220 MPa tensile strength and around 180 MPa compressive strength, with a modulus of elasticity around 16,000 MPa and a density of 1.7-1.9 g/cm³. Electrically, the material offers tracking resistance of CTI 200 and good dielectric strength values. The limiting temperature for continuous use is 155 °C (thermal class F) – significantly higher than the standard grades of the glass-fabric laminate range.

When EP GC 205 is the Right Choice

EP GC 205 is worthwhile whenever elevated operating temperatures occur together with high mechanical and dielectric requirements – for example:

- Electrical insulating parts requiring an elevated continuous-use temperature
- High-strength insulating and partition panels in medium-voltage switchgear technology
- Power-transmission components subject to thermal loading
- Mechanically highly loaded insulating parts in mechanical engineering
- Precision and test engineering requiring low water absorption

When EP GC 205 is Not the Right Choice

Equally important are the limits of the material:

- Direct food contact – EP GC 205 is not declared for this
- Pure cost optimisation without a requirement for elevated limiting temperature – a standard grade such as EP GC 201 or a cotton-fabric laminate is sufficient here
- Flame-retardancy requirement per UL 94 V-0 – EP GC 202 (Hgw 2372.1, "FR-4") is intended for this
- Reshaping or welding – not possible as a thermoset (machining only)
- Skin-sensitive applications without protective measures during machining (glass fibre dust)

What Does EP GC 205 Cost?

EP GC 205 is priced above standard glass-fabric laminates, since the coarse roving fabric and the resin formulation designed for higher thermal classes require more material effort. The component price is determined mainly by sheet thickness, dimensions, material utilisation (offcuts), machining effort and batch size. We are happy to provide binding prices on request based on your drawing.

Machining at Liedtke

EP GC 205 machines well – sawing, milling, drilling and turning produce clean, dimensionally accurate results with sharp, carbide-tipped or diamond-coated tools, and we allow for the increased tool wear caused by the glass fabric. During machining we ensure adequate dust extraction. This allows us to reliably manufacture high-strength, 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 good mechanical strength
- Very good dielectric properties
- Elevated limiting temperature (155 °C, thermal class F)
- Good machinability
- Well-proven, temperature-stable material family

Disadvantages

- Not declared for direct food contact
- Higher price than standard glass-fabric laminates
- Not flame-retardant treated – for UL 94 V-0, choose EP GC 202 (Hgw 2372.1)
- Higher tool wear during machining (glass fabric)

Practical tip: EP GC 205 is the right choice when elevated operating temperatures occur together with high mechanical and dielectric requirements. If the limiting temperature of a standard grade (130 °C) is sufficient, EP GC 201 is the more economical choice; if flame retardancy per UL 94 V-0 is additionally required, EP GC 202 (Hgw 2372.1) is more suitable.

Typical Properties

- Very good mechanical strength
- Very good dielectric properties
- Elevated limiting temperature (155 °C)
- Thermoset, dimensionally stable
- Colour green

Product Examples

- Electrical insulating parts (elevated temperature)
- High-strength insulating and partition panels
- Power-transmission components
- Mechanically highly loaded insulating parts
- Precision and test engineering components

Typical Industries

- Electrical engineering and switchgear construction (medium voltage)
- Mechanical and plant engineering
- Power transmission engineering
- Test and measurement engineering
- Applications with elevated operating temperature

	Test Method	Unit	Value
Mechanical			
Flexural strength	DIN 53452	MPa	350
Tensile strength	DIN 53455	MPa	220
Compressive strength	DIN 53454	MPa	180
Modulus of elasticity	DIN 53452	MPa	16000
Electrical			
Tracking resistance CTI	IEC 112		200
Electric strength	DIN 53481	kV	40
General			
Density	DIN 53479	g / cm ³	1.7-1.9
Limit temperature	VDE 0304, T.21	°C	155
Colour			green

EP GC 205 (Hgw 2370.4 acc. to DIN 7735) is a glass-roving-fabric-reinforced epoxy-resin laminate per EN 60893. The values stated are typical properties, researched from common publicly available data sheet information for this product type; they serve as an aid to material selection and do not constitute a legally binding guarantee of specific properties. Actual values may vary somewhat depending on manufacturer and sheet thickness. EP GC 205 is not declared for direct food contact.