

What is EP GC 201 (Hgw 2372)

EP GC 201 (Hgw 2372)

Glass-fabric laminate with epoxy resin for high mechanical and electrical loads

EP GC 201 (Hgw 2372 acc. to DIN 7735) is a glass-fabric-reinforced epoxy-resin laminate that offers significantly higher mechanical strength, lower water absorption and better electrical insulation values than cotton-fabric laminates. It is the mechanically/electrically high-performance standard grade within the glass-fabric laminate family – without the additional flame-retardant treatment of the FR-4 grade EP GC 202 (Hgw 2372.1).

Classification and Basic Character

EP GC 201 belongs to the family of glass-fabric laminates (industrial laminates): glass-fabric layers are impregnated with epoxy resin and pressed under heat and pressure into sheets, round bars or tubes. Compared with cotton-fabric laminates (Hgw 2081-2088), the combination of glass fabric and epoxy resin yields significantly higher strength, lower water absorption and better electrical insulation values. The colour is characteristically light green.

Distinction from EP GC 202 (Hgw 2372.1) and from cotton-fabric laminates

EP GC 201 is the mechanically and electrically high-performance standard grade of the glass-fabric laminate range, but without the additional flame-retardant treatment of EP GC 202 (Hgw 2372.1, "FR-4"). Where flame retardancy per UL 94 V-0 is required, EP GC 202 (Hgw 2372.1) is the grade to choose. Compared with cotton-fabric laminates such as Hgw 2082/2083, EP GC 201 offers significantly higher strength and lower water absorption thanks to the glass-fabric reinforcement, but at a higher price and with greater tool wear during machining.

How EP GC 201 is Manufactured and Processed

EP GC 201 is produced by pressing epoxy-resin-impregnated glass-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 201 achieves typical values of around 500 MPa flexural strength, around 320 MPa tensile strength and around 350 MPa compressive strength, with a modulus of elasticity around 21,000 MPa and a density of 1.83 g/cm³. Electrically, the material offers high tracking resistance up to CTI 320 and very good dielectric strength values. The limiting temperature for continuous use is 130 °C (thermal class B).

When EP GC 201 is the Right Choice

EP GC 201 is worthwhile whenever high mechanical strength must be combined with good electrical insulation – for example:

- High-strength insulating and partition panels in medium-voltage switchgear technology
- Mechanically highly loaded insulating parts in mechanical engineering
- Jig and fixture components with high electrical stress
- Power-transmission components requiring insulation
- Precision and test engineering requiring low water absorption

When EP GC 201 is Not the Right Choice

Equally important are the limits of the material:

- Direct food contact – EP GC 201 is not declared for this
- Flame-retardancy requirement (UL 94 V-0) – EP GC 202 (Hgw 2372.1, "FR-4") is more suitable here
- Pure cost optimisation without increased mechanical or electrical requirements – a cotton-fabric laminate such as Hgw 2082 is sufficient here
- Continuous use above approx. 130 °C – a silicone-resin laminate is more suitable here
- Reshaping or welding – not possible as a thermoset (machining only)

What Does EP GC 201 Cost?

EP GC 201 is priced above cotton-fabric laminates, since glass fabric and epoxy resin 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 201 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, electrically high-performance 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

- High mechanical strength
- Good electrical insulation properties
- Low water absorption
- High tracking resistance (CTI up to 320)
- Good machinability

Disadvantages

- Not declared for direct food contact
- Not flame-retardant treated – for UL 94 V-0, choose EP GC 202 (Hgw 2372.1)
- Higher tool wear during machining (glass fabric)
- Higher price than cotton-fabric laminates
- Continuous use limited to about 130 °C

Practical tip: EP GC 201 is the right choice when high strength, low water absorption and good electrical insulation are required but flame-retardant treatment is not needed. If UL 94 V-0 is required, EP GC 202 (Hgw 2372.1) is the right choice; if the strength of a cotton-fabric laminate is sufficient, a Hgw 2082/2083 grade is the more economical choice.

Typical Properties

- High mechanical strength
- Good electrical insulation properties
- Low water absorption
- Thermoset laminate (dimensionally stable)
- Good machinability
- Colour light green

Product Examples

- High-strength insulating and partition panels
- Mechanically highly loaded insulating parts
- Jig and fixture components
- Power-transmission components
- Precision and test engineering components

Typical Industries

- Electrical engineering and switchgear construction (medium voltage)
- Mechanical and plant engineering (high-strength insulating parts)
- Jig, fixture and tool making
- Power transmission engineering
- Test and measurement engineering

	Test Method	Unit	Value
Mechanical			
Flexural strength	DIN 53452	MPa	500
Tensile strength	DIN 53455	MPa	320
Compressive strength	DIN 53454	MPa	350
Modulus of elasticity	DIN 53452	MPa	21000
Electrical			
Tracking resistance CTI	IEC 112		320
Electric strength	DIN 53481	kV	80
General			
Density	DIN 53479	g / cm ³	1.83
Limit temperature	VDE 0304, T.21	°C	130
Colour			light green

EP GC 201 (Hgw 2372 acc. to DIN 7735) is a glass-fabric laminate with epoxy resin per DIN 7735 / 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 201 is not declared for direct food contact.