

What is PF CC 203 (Hgw 2083)

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Fine-cotton-fabric laminate with phenolic resin acc. to DIN 7735 / EN 60893 – higher strength and smoother surface than Hgw 2082

PF CC 203 (Hgw 2083) is the upgraded grade within the cotton-fabric-laminate family acc. to DIN 7735 / EN 60893. Through a finer weave, PF CC 203 (Hgw 2083) achieves higher mechanical strength and a smoother surface than the standard grade Hgw 2082 – with the same basic electrical and thermal properties.

Classification and basic character

Like Hgw 2082, PF CC 203 (Hgw 2083) belongs to the cotton-fabric laminates per DIN 7735 / EN 60893, but uses a finer cotton fabric (extra-fine weave) as reinforcement. This finer fabric structure increases mechanical strength and provides a smoother, more even surface. Like all fabric laminates, PF CC 203 (Hgw 2083) is a thermoset: dimensionally stable, hard and not meltable. The colour is brown.

Why a finer weave? The difference from Hgw 2082

The difference between Hgw 2082 and PF CC 203 (Hgw 2083) lies solely in the fineness of the cotton fabric used. The finer weave of PF CC 203 (Hgw 2083) noticeably increases flexural strength (180 vs. 150 MPa), tensile strength (150 vs. 120 MPa) and impact strength, and produces a smoother surface – advantageous for precision parts with tight tolerances or visual surface requirements. Electrical and thermal properties remain almost unchanged compared with Hgw 2082.

How PF CC 203 (Hgw 2083) is manufactured and processed

PF CC 203 (Hgw 2083) is produced by pressing phenolic-resin-impregnated fine-fabric layers into sheets, round bars or tubes. From these semi-finished products we machine precision parts – sawing, milling, drilling and turning produce clean, dimensionally accurate results with sharp, carbide-tipped tools. Adequate dust extraction should be ensured during machining (resin/fabric dust).

Mechanical, electrical and thermal properties

PF CC 203 (Hgw 2083) achieves typical values of around 180 MPa flexural strength, around 150 MPa tensile strength and around 200 MPa compressive strength, with a modulus of elasticity around 8,000 MPa and a density of about 1.36 g/cm³. Electrically, the material offers solid tracking resistance (CTI 100-160) and good insulation and dielectric strength values. The limiting temperature for continuous use is 110 °C (thermal class E).

When PF CC 203 (Hgw 2083) is the right choice

PF CC 203 (Hgw 2083) is worthwhile whenever, in addition to the economical basics of cotton-fabric laminate, higher strength or a smoother surface is required – for example:

- Precision mechanical components with tight tolerances
- Gears, cams and sliding elements under increased load
- Insulating and partition panels in low-voltage switchgear technology
- Components requiring a smooth, even surface
- Jig and fixture components under higher mechanical load

When PF CC 203 (Hgw 2083) is not the right choice

Equally important are the limits of the material:

- Direct food contact – PF CC 203 (Hgw 2083) is not declared for this
- Medium-voltage applications with high tracking-resistance requirements (CTI > 200) – Hgw 2372.1 or melamine-resin-bonded grades are better suited here
- Continuous use above approx. 110 °C
- Very humid or wet environments (cotton fabric is hygroscopic)
- Pure cost optimisation without increased strength or surface requirements – standard Hgw 2082 is sufficient here

What does PF CC 203 (Hgw 2083) cost?

PF CC 203 (Hgw 2083) is priced slightly above the standard grade Hgw 2082, since the finer fabric requires more material effort. The component price is determined mainly by sheet thickness or bar diameter, 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

PF CC 203 (Hgw 2083) machines well – sawing, milling, drilling and turning produce clean, dimensionally accurate results with sharp, carbide-tipped tools, with the finer fabric structure giving a particularly smooth surface. During machining we ensure adequate dust extraction. This allows us to reliably manufacture mechanically robust precision 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

- Higher mechanical strength than Hgw 2082
- Smoother, more even surface
- Good electrical insulation properties
- Good machinability
- Proven, widely used material

Disadvantages

- Not declared for direct food contact
- Moderate tracking resistance (CTI 100-160) – usually insufficient for medium voltage
- Cotton fabric absorbs moisture
- Continuous use limited to about 110 °C
- Slightly higher price than standard Hgw 2082

Typical Properties

- Higher mechanical strength than standard laminate
- Smoother, more even surface
- Good electrical insulation properties
- Thermoset, dimensionally stable
- Good machinability
- Colour brown

Product Examples

- Precision mechanical components
- Gears and sliding elements (increased load)
- Insulating and partition panels (low voltage)
- Components with smooth-surface requirement
- Jig and fixture components

Typical Industries

- Electrical and insulation technology (low voltage)
- Precision mechanics and fine mechanical engineering
- Jig, fixture and tool making
- Drive technology
- Switchgear and equipment construction

	Test Method	Unit	Value
Mechanical			
Flexural strength	DIN 53452	MPa	180

	Test Method	Unit	Value
Tensile strength	DIN 53455	MPa	150
Compressive strength	DIN 53454	MPa	200
Modulus of elasticity	DIN 53452	MPa	8000
Electrical			
Tracking resistance CTI	IEC 60112		160
Electric strength	DIN 53481	kV	17
General			
Density	DIN 53479	g / cm ³	1.36
Limit temperature	VDE 0304, T.21	°C	110
Colour			brown

PF CC 203 (Hgw 2083) is a fine cotton-fabric laminate with phenolic 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. PF CC 203 (Hgw 2083) is not declared for direct food contact.