

What is PF CP 201 (Hp 2061)

PF CP 201 (Hp 2061)

PF CP 201 n. EN 60893 / Hp 2061 n. DIN 7735 – phenolic paper laminate, standard general-purpose grade

PF CP 201 (Hp 2061) is the economical standard grade among phenolic paper laminates (NEMA X/XP) – the most widely used base grade of the paper-laminate series. It consists of phenolic resin reinforced with cellulose paper and combines good basic mechanical properties with moderate electrical insulation performance – at an attractive price.

Classification and Basic Character

Paper-based laminate (PF-CP) belongs to the large family of industrial laminates: paper webs are impregnated with a thermoset resin and pressed under heat and pressure into sheets, rods or tubes. In PF CP 201 (Hp 2061), the reinforcing material is cellulose paper and the bonding resin is a phenol-formaldehyde resin. Unlike thermoplastics, the cured thermoset does not melt but remains dimensionally stable, hard and mechanically resilient. The colour is typically brown.

The Economical Standard Grade Within the PF-CP Family

Within the phenolic paper laminate family according to DIN 7735 / EN 60893 (PF CP 201 to PF CP 206), PF CP 201 (Hp 2061) represents the standard grade (NEMA designation X/XP): solid basic mechanical properties and moderate electrical performance at an economical price – the most widely used grade of the series. Other grades in the family are designed for more specialised requirements: PF CP 202 (Hp 2061.5) offers improved electrical properties with the highest dielectric strength in the series (40 kV), PF CP 203 (Hp 2061.6) is hot-punchable and has the lowest water absorption, PF CP 204 (Hp 2063) is flame-retardant to UL94 V-0 (widely known as "FR-2" and the basis for flame-retardant printed circuit boards), and PF CP 205 (Hp 2062.9) and PF CP 206 (Hp 2062.8) are economical punching grades for stamped parts without high mechanical requirements. For general mechanical and electrical applications without special requirements, PF CP 201 (Hp 2061) is the most economical choice.

How PF CP 201 (Hp 2061) Is Manufactured and Processed

PF CP 201 (Hp 2061) is produced by pressing phenolic-resin-impregnated cellulose paper webs into sheets, rods or tubes. From these semi-finished products we machine precision parts – sawing, milling, drilling and turning can be carried out cleanly and accurately with sharp, carbide-tipped tools. Adequate dust extraction should be ensured during machining (resin/paper dust).

Mechanical, Electrical and Thermal Properties

PF CP 201 (Hp 2061) achieves typical values of 150 MPa flexural strength, 100 MPa tensile strength and 150 MPa compressive strength (parallel to laminations) or 300 MPa (perpendicular to laminations), with a modulus of elasticity of 7000 MPa and a density of 1.4 g/cm³. Electrically, the material offers a moderate comparative tracking index (CTI 100) and an electric strength of 15 kV in both lamination directions. The limiting temperature for continuous use is 120 °C (thermal class E).

When PF CP 201 (Hp 2061) Is the Right Choice

PF CP 201 (Hp 2061) is worthwhile whenever an economical, mechanically resilient insulating and structural material is needed for general applications in the low-voltage range – for example:

- Insulating and partition parts in low-voltage switchgear engineering
- Gears, cams and sliding elements in mechanical engineering
- Jig and fixture components
- Spacers, brackets and mechanical structural parts
- General electrical insulation parts without special requirements

When PF CP 201 (Hp 2061) Is NOT the Right Choice

Equally important are the material's limits:

- Direct food contact – PF CP 201 (Hp 2061) is not declared suitable for this
- Applications requiring higher dielectric strength/electrical performance – PF CP 202 (Hp 2061.5) is the better choice here
- Hot punching with particularly low water absorption requirements – PF CP 203 (Hp 2061.6) is more suitable here
- Applications requiring flame retardancy (UL94 V-0) – PF CP 204 (Hp 2063) should be used here
- Continuous use above approx. 120 °C, damp/wet environments, or reshaping/welding applications (paper reinforcement is hygroscopic, thermosets cannot be reshaped or welded)

What Does PF CP 201 (Hp 2061) Cost?

PF CP 201 (Hp 2061) is the most economical phenolic paper laminate grade in the PF-CP series. Component price is mainly determined by sheet thickness or rod 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 CP 201 (Hp 2061) machines well – sawing, milling, drilling and turning can be carried out cleanly and accurately with sharp, carbide-tipped tools. We ensure adequate dust extraction during machining. This allows us to reliably manufacture economical insulating and structural 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

- Economical standard-grade paper laminate, most widely used grade
- Good basic mechanical properties
- Thermoset, dimensionally stable
- Good machinability
- Proven, widely used material

Disadvantages

- Not declared suitable for direct food contact
- Moderate comparative tracking index (CTI 100) – unsuitable for higher electrical requirements
- Paper reinforcement absorbs moisture
- Continuous use limited to approx. 120 °C
- Not flame-retardant (standard grade)

Practical tip: PF CP 201 (Hp 2061) is the right choice for economical, mechanically resilient insulating and structural parts in the low-voltage range without special requirements. If higher dielectric strength is needed, PF CP 202 (Hp 2061.5) is the better choice; for flame-retardancy requirements, PF CP 204 (Hp 2063) is recommended.

Typical Properties

- Economical standard-grade paper laminate (NEMA X/XP)
- Good basic mechanical properties
- Moderate electrical insulation properties
- Thermoset laminate (dimensionally stable)
- Good machinability
- Most widely used grade of the PF-CP series
- Cost-effective

Product Examples

- Insulating and partition parts (low voltage)
- Gears and sliding elements
- Jig and fixture components
- Spacers and brackets
- General electrical insulation parts

Typical Industries

- Electrical engineering and insulation technology (low voltage)
- Mechanical and plant engineering
- Jig, fixture and tool making
- Drive technology
- Switchgear and equipment manufacturing
- General mechanical component making

- Colour brown

	Test Method	Unit	Value
Mechanical			
Flexural strength	DIN 53452	MPa	150
Tensile strength	DIN 53455	MPa	100
Compressive strength	DIN 53454	MPa	150
Modulus of elasticity	DIN 53457	MPa	7000
Electrical			
Comparative tracking index (CTI)	IEC 112	–	100
Electric strength	DIN 53481	kV	15
General			
Density	DIN 53479	g/cm ³	1.4
Limiting temperature	VDE 0304/2	°C	120
Colour			brown

PF CP 201 (Hp 2061) is a phenolic paper laminate (phenolic resin/paper) according to DIN 7735 / EN 60893. The stated values are typical properties researched from commonly available published datasheet information for this product type; they serve as an aid to material selection and are not a legally binding warranty of specific properties. Actual values may vary slightly depending on manufacturer and sheet thickness. PF CP 201 (Hp 2061) is not declared suitable for direct food contact.