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What Is Hm 2472 (UP GM 204)

Hm 2472 (UP GM 204)

Hm 2472 acc. DIN 7735 / UP GM 204 acc. EN 60893 – glass-mat reinforced unsaturated polyester hard laminate (“hartmatte”), NEMA equivalent GPO-3

Hm 2472 (UP GM 204) is the mechanically upgraded grade of the glass-mat reinforced polyester hard laminate (“hartmatte”) within the Hm 2471 (UP GM 203) material family. It consists of polyester resin reinforced with glass-fibre mats and offers higher flexural and tensile strength than the standard grade, as well as a higher limiting temperature of 155 °C (thermal class F).

Classification and Basic Character

Glass-mat hard laminates (“hartmatte”, UP GM) belong to the family of industrial laminates: glass-fibre mats are impregnated with a thermoset resin and pressed under heat and pressure into sheets or rods. In Hm 2472 (UP GM 204), the reinforcing material is a glass-fibre mat and the bonding resin is an unsaturated polyester resin (UP resin) – as with the entire hartmatte family. Unlike thermoplastics, the cured thermoset does not melt but remains dimensionally stable, hard and mechanically resilient. The colour is white.

Hm 2472 (UP GM 204) and Hm 2471 (UP GM 203) Compared

Hm 2472 (UP GM 204) is the mechanically upgraded grade within the hartmatte family: higher flexural and tensile strength as well as a limiting temperature 25 °C higher (155 °C, thermal class F to IEC 85) than the standard grade Hm 2471 (UP GM 203) (130 °C). For applications with elevated continuous thermal load or higher mechanical requirements, Hm 2472 (UP GM 204) is the more suitable choice; for general electrical insulation applications up to 130 °C, Hm 2471 (UP GM 203) remains the more economical option.

How Hm 2472 (UP GM 204) Is Manufactured and Processed

Hm 2472 (UP GM 204) is produced by pressing resin-impregnated glass-fibre mats into sheets or rods. 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. Because of the abrasive glass-fibre content, increased tool wear should be expected and adequate dust extraction must be ensured.

Mechanical, Electrical and Thermal Properties

Hm 2472 (UP GM 204) achieves typical values of 200 MPa flexural strength and 124 MPa tensile strength, with a notched impact strength of 150 kJ/m² (10 °C) and a density of approx. 1.80 g/cm³. Electrically, the material offers a high comparative tracking index (CTI 600). The limiting temperature for continuous use is 155 °C (thermal class F).

When Hm 2472 (UP GM 204) Is the Right Choice

Hm 2472 (UP GM 204) is worthwhile whenever a highly insulating, particularly resilient structural material is needed for elevated thermal requirements – for example:

- Insulating and separating parts with elevated continuous thermal load (up to 155 °C)
- More heavily loaded structural parts in electrical machine engineering
- Support insulators and busbar holders for elevated requirements
- Components requiring arc- and tracking-resistance (CTI 600)
- Applications where the standard grade Hm 2471 (UP GM 203) reaches its mechanical or thermal limits

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When Hm 2472 (UP GM 204) Is Not the Right Choice

Equally important are the limits of the material:

- Direct food contact – Hm 2472 (UP GM 204) is not declared suitable for this
- General applications without elevated thermal/mechanical requirements – the more economical Hm 2471 (UP GM 203) is sufficient here
- Permanently damp/wet environments without additional protection
- Applications requiring non-machining forming or welding (thermoset)

What Does Hm 2472 (UP GM 204) Cost?

Due to its upgraded mechanical and thermal properties, Hm 2472 (UP GM 204) falls in the upper price segment of the hartmatte series. Component price is determined mainly by sheet thickness or rod diameter, dimensions, material utilisation (offcut), machining effort and batch size. We are happy to quote binding prices on request based on your drawing.

Machining at Liedtke

Hm 2472 (UP GM 204) machines well – sawing, milling, drilling and turning can be carried out cleanly and accurately with sharp, carbide-tipped tools. Because of the abrasive glass-fibre content we use wear-resistant tools and ensure adequate dust extraction. This allows us to reliably produce high-quality 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

- Higher limiting temperature (155 °C, thermal class F)
- Higher flexural and tensile strength than the standard grade
- High comparative tracking index (CTI 600)
- Thermoset, dimensionally stable
- Self-extinguishing (UL 94 V-0)

Disadvantages

- Not declared suitable for direct food contact
- Higher price than the standard grade Hm 2471 (UP GM 203)
- Glass-fibre content is abrasive, increased tool wear
- Cannot be formed or welded (thermoset)

Practical tip: Hm 2472 (UP GM 204) is the right choice when the limiting temperature or mechanical resilience of the standard grade Hm 2471 (UP GM 203) is not sufficient. For general insulating and structural applications up to 130 °C, Hm 2471 (UP GM 203) is the more economical alternative.

Typical Properties

- Glass-mat reinforced polyester hard laminate (“hartmatte”)
- Mechanically upgraded grade within the hartmatte series
- Increased limiting temperature 155 °C (thermal class F)
- High comparative tracking index (CTI 600)
- Thermoset laminate (dimensionally stable)
- Good machinability
- Self-extinguishing (UL 94 V-0)
- Colour white

Product Examples

- Highly loaded insulating parts in switchgear and transformer construction
- Components with elevated continuous thermal load (up to 155 °C)
- Mechanically loaded structural parts in electrical machine engineering
- Support insulators and busbar holders for elevated requirements
- Fixture and test-equipment components requiring higher strength

Typical Industries

- Electrical engineering and switchgear construction (elevated thermal duty)
- Power supply, transformer and electrical machine engineering
- Mechanical and plant engineering
- Jig, fixture and tool making
- Test and measurement technology
- General mechanical component manufacturing with elevated temperature demand

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	Test Method	Unit	Value
Mechanical			
Flexural Strength	ISO 178	N/mm²	200
Tensile Strength	ISO 527	N/mm²	124
Notched Impact Strength (10°C)	ISO 179	kJ/m²	150
Electrical			
Comparative Tracking Index CTI	IEC 112	–	600
General			
Density	ISO 1183	g/cm³	1.80
Limiting Temperature	IEC 216	°C	155
Thermal Class	IEC 85	–	F
Colour			white

Hm 2472 (UP GM 204) is a glass-mat reinforced polyester hard laminate (“hartmatte”) to DIN 7735 / EN 60893. The values stated are typical properties, researched from publicly available market datasheet 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 slightly depending on manufacturer and sheet thickness. Hm 2472 (UP GM 204) is not declared suitable for direct food contact.

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