

What is PET FG natural

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PET, food grade (FG)

PET FG natural is a polyethylene terephthalate in a food grade compound (FG). It offers high strength and stiffness, a low tendency to creep, very low moisture absorption and excellent sliding properties – for dimensionally stable, wear-resistant components with food contact.

Properties

PET FG natural is a semi-crystalline engineering thermoplastic with high mechanical strength, low thermal expansion and a continuous service temperature of 115 °C. Compared to POM, it offers higher strength, lower creep and better resistance to acids; the low moisture absorption ensures stable dimensions even in humid environments. The compound is designed for food contact (see FDA declaration).

PET is sensitive to hydrolysis: cleaning with hot water above approx. 60 °C or steam is not recommended (risk of stress cracking). The notched impact strength is low; the elongation at break is approx. 15 %.

Advantages

- Compound designed for food contact
- High strength and stiffness, low tendency to creep
- Very good sliding properties, high wear resistance
- Very low moisture absorption, high dimensional stability

Disadvantages

- Not resistant to hot water above approx. 60 °C and steam (hydrolysis)
- Low notched impact strength
- Not resistant to strong alkalis and some solvents

Processing

PET FG natural can be machined excellently using all conventional cutting methods; HSS or carbide tools are sufficient. Good cooling via chip removal avoids heat build-up; sharp edges and notches in the part should be avoided because of the low notched impact strength.

For components with food contact, we use food-compatible cooling lubricants and supply with batch traceability on request.

For sliding applications, the low coefficient of friction against steel allows dry running in many cases; against soft mating surfaces we recommend a lubricant-modified grade where required.

Typical Applications

PET FG natural is used wherever dimensionally stable, wear-resistant sliding and functional parts come into contact with foodstuffs – for example in the food and packaging industry and in mechanical engineering for filling and conveyor systems.

- Sliding and guide elements in filling lines
- Format parts, star wheels and guide rails
- Precision parts with high dimensional stability

Typical Properties

- Compound suitable for food contact
- High strength and very good sliding properties
- High dimensional stability

Product Examples

- Sliding and guide elements
- Format parts and star wheels
- Precision parts

Typical Industries

- Food Industry
- Packaging Industry
- Mechanical Engineering

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.39
Water absorption	DIN EN ISO 62	%	0.25
Flammability (Thickness 3 mm / 6 mm)	UL 94		HB / HB
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	85
Elongation at break	DIN EN ISO 527	%	15
Tensile modulus of elasticity	DIN EN ISO 527	MPa	3.200
Notched impact strength	DIN EN ISO 179	kJ / m ²	2.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	190
Shore hardness	DIN EN ISO 868	scale D	83
Thermal Properties			
Melting temperature	ISO 11357-3	°C	255
Thermal conductivity	DIN 52612-1	W / (m * K)	0.28
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	60
Service temperature, long term	Average	°C	-20 ... 115
Service temperature, short term (max.)	Average	°C	180
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	80