



Material Data Sheet (preliminary)

EOS PEEK HP3

Application

EOS provides the world-first high-performance polymer for the laser-sintering process - EOS PEEK HP3. Belonging to the group of Polyaryletherketone (PAEK), this semi-crystalline, thermoplastic material was developed for the use on the new high-temperature system EOSINT P 800.

The laser-sintered parts achieve a tensile strength up to 95 MPa and a Young's modulus up to 4400 MPa. These values are on an up to 100 percent higher level than the so far market dominating materials PA 12 and PA 11. The continuous use temperature ranges within 180 °C (mechanical dynamic), 240 °C (mechanical static) and 260 °C (electrical) depending on the field of application which could not be reached so far.

EOS PEEK HP3 is characterized by an outstanding combination of properties like

- excellent high temperature performance
- high wear resistance
- outstanding chemical resistance
- best fire, smoke and toxicity performance
- good hydrolysis resistance
- potential biocompatibility
- sterilisability

Due to this exceptional combination of properties EOS PEEK HP3 is optimally suited for highest demanding applications e.g. in medicine, aerospace industry or motorsports. In medical applications the outstanding properties make this material an ideal replacement for stainless steel and titanium. And in aerospace and in motorsports where light weight and fire resistance are of largest importance, EOS PEEK HP3 has developed to an adequate metal replacement.

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Technical Data

General Material Properties

Average grain size	ISO 13320-1	60	μm
	Laser diffraction	2.36	mil
Bulk density	DIN 53466	0.43 ± 0.01	g/cm ³
Density of laser-sintered part	DIN EN ISO 1183	1.315 ± 0.01	g/cm ³

Mechanical Properties (x, y-direction)

Tensile modulus	EN ISO 527	4250 ± 150	MPa
	ASTM D638	616 ± 22	ksi
Tensile strength	EN ISO 527	90 ± 5	MPa
	ASTM D638	13 ± 0.72	ksi
Elongation at break	EN ISO 527	2.8 ± 0.2	%
	ASTM D638	2.8 ± 0.2	%

Thermal Properties

Melting point	DSC	372 (702)	°C (°F)
Glass transition temperature (T _g)	DSC	164 (327)	°C (°F)
Heat deflection temperature (HDT A)	ISO 75 (1.8 MPa)	206 (403)	°C (°F)
	ASTM D648		
Heat deflection temperature (HDT B)	ISO 75 (0.45 MPa)	352 (666)	°C (°F)
	ASTM D648		
Continuous use temperature			
electrical		260 (500)	
mechanical w/o impact		240 (464)	°C (°F)
mechanical w/impact	UL 746B	180 (356)	

The mechanical properties depend on the x-, y-, z-position of the test parts and on the exposure parameters used. The data are based on our latest knowledge and are subject to changes without notice. They do not guarantee properties for a particular part and in a particular application.

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