

## Typical Material Properties

PEEK-OPTIMA® Natural Polymer, the foundation polymer of the PEEK-OPTIMA product family, features nearly 15 years of implantation, in a diverse range of applications, and successful use in regulatory approved devices. Available in a range of forms, PEEK-OPTIMA Natural delivers a variety of high performance options virtually unmatched in a radiolucent implantable biomaterial.

### Granular Form\* materials required

Property	Method	Units	PEEK-OPTIMA Natural	
			LT1	LT3
Color			Natural	Natural
Melt Viscosity	*Capillary	kNs/m <sup>2</sup>	0.44	0.16
Density	ISO 1183	G cm <sup>-3</sup>	1.3	1.3
Tensile Strength (Yield)	ISO 527	MPa (ksi)	100	108
Tensile Elongation (Break)	ISO 527	%	40	25
Flexural Modulus	ISO 178	GPa	4.1	4.2
Flexural Strength	ISO 178	MPa	165	170
Shear Strength	ASTM D732	MPa	90	88
Shear Modulus	ISO 15310	GPa	1.15	1.00
Compressive Strength	ISO 604	MPa	135	135
Poisson's Ratio	ASTM D638	N/A	0.36	0.36
Rockwell Hardness	ASTM D785	M Scale	99	99
Izod Impact (Unnotched)	ISO 180	kJm <sup>-2</sup>	No break	No break
Izod Impact (Notched)	ISO 180	kJm <sup>-2</sup>	7.5	4.5
Relative Thermal Index	UL 746 B	°C (°F)	260 (500)	260 (500)
Water Absorption (24 hours)	ISO 62	Wt. %	0.5	0.5
Melt Temperature	DSC	°C (°F)	340 (644)	340 (644)
Mold Shrinkage in flow direction	Mold temp.	%	1.2	1.3
Coefficient of Thermal Expansion	ASTM D696	10 <sup>-5</sup> °C <sup>-1</sup>		
<i>Below Tg</i>				
<i>Above Tg</i>			4.7	4.7

Mechanical properties as molded

\*Melt viscosity measurement carried out according to internal Invibio test method

## Rod Forms

Property	Method	Units	PEEK-OPTIMA Natural
Tensile Strength (Yield)	ISO 527	MPa (ksi)	115
Tensile Elongation (Break)	ISO 527	%	20
Flexural Modulus	ISO 178	GPa	4
Flexural Strength	ISO 178	MPa	170
Izod Impact (Unnotched)	ISO 180	$\text{kJm}^{-2}$	Does not break
Izod Impact (Notched)	ISO 180	$\text{kJm}^{-2}$	4.7



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