U03 - PEEK

Chemical Designation
PEEK (Polyetheretherketone)

Colour
beige opaque

Density
1.31 g/cm^3

Main features
- good heat deflection temperature
- good machinability
- inherent flame retardant
- resistance against high energy radiation
- good slide and wear properties
- very good chemical resistance
- high creep resistance
- hydrolysis and superheated steam
- resistant

Target Industries
- chemical technology
- mechanical engineering
- food technology
- electronics
- energy industry
- oil and gas industry
- aircraft and aerospace technology
- automotive industry
- semiconductor technology
- vacuum technology

MECHANICAL PROPERTIES	PARAMETER	VALUE	UNIT	NORM	
Tensile strength	50mm/min	116	MPa	DIN EN ISO 527-2	
Modulus of elasticity (tensile test)	1mm/min	4200	MPa	DIN EN ISO 527-2	1)
Tensile strength at yield	50mm/min	116	MPa	DIN EN ISO 527-2	
Elongation at yield (tensile test)	50mm/min	5	%	DIN EN ISO 527-2	
Elongation at break (tensile test)	50mm/min	15	%	DIN EN ISO 527-2	
Flexural strength	2mm/min, 10 N	175	MPa	DIN EN ISO 178	2)
Modulus of elasticity (flexural test)	2mm/min, 10 N	4200	MPa	DIN EN ISO 178	
Compression strength	1% / 2% / 5% 5mm/min, 10 N	23/43/10	MPa	EN ISO 604	3)
Compression modulus	5mm/min, 10 N	3400	MPa	EN ISO 604	4)
Impact strength (Charpy)	max. 7,5J	n.b.	kJ/m2	DIN EN ISO 179-1eU	5)
Notched impact strength (Charpy)	max. 7,5J	4	kJ/m2	DIN EN ISO 179-1eA	
Shore hardness					

Comment
(1) For tensile test: specimen type 1b
(2) For flexural test: support span 64mm, norm specimen.
(3) Specimen 10x10x10mm
(4) Specimen 10x10x50mm, modulus range between 0.5 and 1% compression.
(5) For Charpy test: support span 64mm, norm specimen.
n.b. = not broken

THERMAL PROPERTIES	PARAMETER	VALUE	UNIT	NORM	
Glass transition temperature		150	°C	DIN EN ISO 11357	1)
Melting temperature		341	°C	DIN EN ISO 11357	
Heat distortion temperature	HDT, Method A	162	°C	ISO-R 75 Method A	
Service temperature	short term	300	°C		2)
Service temperature	long term	260	°C	-	
Thermal expansion (CLTE)	23-60°C, long.	5	$10^{-5}\,K^{-1}$	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	23-100°C, long.	5	$10^{-5}\,K^{-1}$	DIN EN ISO 11359-1;2	
Thermal expansion (CLTE)	100-150°C, long.	7	$10^{-5}\,K^{-1}$	DIN EN ISO 11359-1;2	
Specific heat		1.1	J/(g*K)	ISO 22007-4:2008	
Thermal conductivity		0.27	J/(g*K)	ISO 22007-4:2008	

Comment
(1) Found in public sources.
(2) Found in public sources. Individual testing regarding application conditions is mandatory.

ELECTRICAL PROPERTIES	PARAMETER	VALUE	UNIT	NORM	
Surface resistivity	Silver electrode, 23°C, 12% r.h.	10^{15}	Ω	-	1)
Volume resistivity	Silver electrode, 23°C, 12% r.h.	10^{15}	Ω*cm	DIN IEC 60093	
Dielectric strength	23°C, 50% r.h.	73	kV/mm	ISO 60243-1	2)
Resistance to tracking (CTI)	Platin electrode, 23°C, 50% r.h., solvent A	125	V	DIN EN 60112	

Comment
(1) Specimen in 20mm thickness
(2) Specimen in 1mm thickness

OTHER PROPERTIES	PARAMETER	VALUE	UNIT	NORM	
Water absorption	24h / 96h (23°C)	0.02 / 0.03	%	DIN EN ISO 62	1)
Resistance to hot water/ bases		+		-	2)
Resistance to weathering		-		-	3)
Flammability (UL94)	listed (value at 1.5mm)	V0		DIN IEC 60695-11-10	

Comment
(1) Ø ca. 50mm, h=13mm
(2) + good resistance
(3) - poor resistance

Revisione 02.25

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