

## Product Information

### VESTAKEEP® I4G

**Medical grade for long-term body contact<sup>1)</sup>, high-viscosity, unreinforced polyether ether ketone**

VESTAKEEP I4G is a high-viscosity, unreinforced polyether ether ketone for injection molding and extrusion. The semi-crystalline polymer features superior thermal and chemical resistance. Parts made from VESTAKEEP I4G are self-extinguishing.

VESTAKEEP I4G can be processed by common machines for thermoplastics. We recommend a melt temperature between 698°F and 716°F during the injection molding process. The mold temperature should be within a range of 320°F to 392°F, preferably 356°F.

VESTAKEEP I4G is supplied as granules in 25 kg boxes with moisture-proof polyethylene liners.

For information about processing of VESTAKEEP I4G, please follow the general recommendations in our brochure "VESTAKEEP Polyether Ether Ketone Compounds".

**VESTAKEEP I4G fulfils the following requirements to meet the demands for medical applications:**

United States Pharmacopoeia Testing: <88> "Biological Reactivity Testing In Vivo" Class VI:

- Acute Systemic Toxicity test: 4 different extraction media (158°F/24h)
- Irritation Test – Intracutaneous Injection test: 4 different extraction media (158°F/24h)

- Implantation Test: In Vivo-Implantation test: intramuscular, 7 days

Biocompatibility testing:

- United States Pharmacopoeia Testing : <87> "Biological Reactivity Testing In Vitro"
- Cytotoxicity Test: L929 MEM elution, according to ISO 10993-5 (99°F/24h)
- ISO 10993-4: Haemocompatibility
- ISO 10993-18: Investigation of extractable organic substances

<sup>1)</sup> In addition to the body contact period the suitability of the material depends on further criteria, for example the nature of the contact, the processing, or the surface. In any case the suitability has to be verified for the end product.

**For further information, please contact our experts in the department Market Development of the High Performance Polymers Business Line.**

Property	Test method					
		Unit SI	VESTAKEEP I4G	Unit US	VESTAKEEP I4G	
Density	73°F	ISO 1183	g/cm <sup>3</sup>	1.30	g/cm <sup>3</sup>	1.30
Tensile test	ASTM D638					
Stress at yield			MPa	94	kpsi	13.6
Strain at yield			%	5	%	5
Strain at break			%	> 50	%	> 50
Tensile modulus		ASTM D638	MPa	3600	kpsi	520
Flexural test	ASTM D790					
Flexural strength			MPa	140	kpsi	20.3
Flexural modulus		ASTM D790	MPa	3300	kpsi	480
CHARPY impact strength	ISO 179/1eU					
	73°F		kJ/m <sup>2</sup>	N <sup>1)</sup>	kJ/m <sup>2</sup>	N <sup>1)</sup>
	-22°F		kJ/m <sup>2</sup>	N <sup>1)</sup>	kJ/m <sup>2</sup>	N <sup>1)</sup>
IZOD notched impact strength	ASTM D256 A					
	73°F		J/m	68	ft-lb/in	1.3
	-22°F		J/m	60	ft-lb/in	1.1
Vicat softening temperature	ISO 306					
Method A	10 N		°C	335	°F	635
Method B	50 N		°C	305	°F	581
Linear thermal expansion	ISO 11359					
longitudinal	73-131°F		10 <sup>-4</sup> K <sup>-1</sup>	0.6	ppm/°F	33
Relative permittivity	IEC 60250					
	50 Hz			2.8		2.8
	1 MHz			2.8		2.8
Electric strength	K20/P50	IEC 60243-1	kV/mm	16	V/mil	406
Volume resistivity		IEC 60093	Ohm · m	10 <sup>15</sup>	Ohm · m	10 <sup>15</sup>
Surface resistance		IEC 60093	Ohm	10 <sup>14</sup>	Ohm	10 <sup>14</sup>
Melting range	ISO 11357					
DSC	2 <sup>nd</sup> heating		°C	approx. 340	°F	approx. 644
Melt volume-flow rate (MVR)	ISO 1133					
	716°F/ 5kg		cm <sup>3</sup> /10 min	12	cm <sup>3</sup> /10 min	12
Flammability acc. UL94	IEC 60695					
	0.06 inch	UL94		V-0		V-0
Glow wire test	IEC 60695-2-					
GWIT	0.08 inch	12/13	°C	850	°F	1562
GWFI	0.08 inch		°C	960	°F	1760
Mold shrinkage	0.08 inch					
in flow direction		sheets, mold-	%	1.1	%	1.1
in transverse direction		temp. 356°F	%	1.8	%	1.8
		ISO 294-4				

<sup>1)</sup> N = No break

® = registered trademark

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