

## Product Information

### VESTAKEEP® M4G

**Medical grade; high-viscosity, unreinforced polyether ether ketone**

VESTAKEEP® M4G is a high-viscosity polyether ether ketone (PEEK) resin that is designed for medical applications with limited time body contact (up to 180 days).

VESTAKEEP M4G can be processed by common machines for thermoplastics. We recommend a melt temperature between 370°C and 380°C during the injection molding process. The mold temperature should be within a range of 160°C to 200°C, preferably 180°C.

VESTAKEEP M4G is supplied as granules in 25 kg boxes with moisture-proof polyethylene liners.

For information about processing VESTAKEEP M4G please follow the general recommendations in our brochure "VESTAKEEP Polyether Ether Ketone Compounds".

**VESTAKEEP M4G 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 (70°C/24h)
- Irritation test – Intracutaneous Injection Test: 4 different extraction media (70°C/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 (37°C/24h)

**For further information, please contact us at [evonik-hp@evonik.com](mailto:evonik-hp@evonik.com).**

Property	Test method		Unit	VESTAKEEP M4G	
	international	national			
Density	23°C	ISO 1183	DIN EN ISO 1183	g/cm <sup>3</sup>	1.30
Tensile test		ISO 527-1	DIN EN ISO 527-1		
Stress at yield		ISO 527-2	DIN EN ISO 527-2	MPa	96
Strain at yield				%	5
Strain at break				%	30
Tensile modulus		ISO 527-1	DIN EN ISO 527-1	MPa	3500
		ISO 527-2	DIN EN ISO 527-2		
CHARPY impact strength		ISO 179/1eU	DIN EN ISO 179/1eU		
	23°C			kJ/m <sup>2</sup>	N <sup>1)</sup>
	-30°C			kJ/m <sup>2</sup>	N <sup>1)</sup>
CHARPY notched impact strength		ISO 179/1eA	DIN EN ISO 179/1eA		
	23°C			kJ/m <sup>2</sup>	7 C <sup>1)</sup>
	-30°C			kJ/m <sup>2</sup>	6 C <sup>1)</sup>
Vicat softening temperature		ISO 306	DIN EN ISO 306		
Method A	10 N			°C	335
Method B	50 N			°C	305
Linear thermal expansion		ISO 11359	DIN 53752		
longitudinal	23-55°C			10 <sup>-4</sup> K <sup>-1</sup>	0.6
Relative permittivity		IEC 60250	DIN VDE 0303-T4		
	50 Hz				2.8
	1 MHz				2.8
Electric strength	K20/P50	IEC 60243-1	IEC 60243-1	kV/mm	16
Comparative tracking index		IEC 60112	IEC 60112		
Test solution A	CTI				200
	100 drops value				175
Volume resistivity		IEC 60093	DIN IEC 60093	Ohm · cm	10 <sup>15</sup>
Surface resistance		IEC 60093	DIN IEC 60093	Ohm	10 <sup>14</sup>
Melting range		ISO 11357			
DSC	2 <sup>nd</sup> heating			°C	approx. 340
Melt volume-flow rate (MVR)		ISO 1133	DIN EN ISO 1133		
	380°C/ 5kg			cm <sup>3</sup> /10 min	11
Flammability acc. UL94		IEC 60695	UL94		
	3.2 mm				V-0
Glow wire test		IEC 60695-2-	DIN EN 60695-2-		
GWIT	2 mm	12/13	12/13	°C	825
GWFI	2 mm			°C	960
Mold shrinkage		determined on 2 mm sheets			
	in flow direction	with film gate at rim		%	0.9
	in transverse direction	mold temperature 180°C, ISO 294-4		%	1.1

Pigmentation may affect values.

<sup>1)</sup> C = Complete break, incl. hinge break H  
N = No break

® = registered trademark

This information and all technical and other advice are based on Evonik's present knowledge and experience. However, Evonik assumes no liability for such information or advice, including the extent to which such information or advice may relate to third party intellectual property rights. Evonik reserves the right to make any changes to information or advice at any time, without prior or subsequent notice. Evonik disclaims all representations and warranties, whether express or implied, and shall have no liability for, merchantability of the product or its fitness for a particular purpose (even if Evonik is aware of such purpose), or otherwise. Evonik shall not be responsible for consequential, indirect or incidental damages (including loss of profits) of any kind. It is the customer's sole responsibility to arrange for inspection and testing of all products by qualified experts. Reference to trade names used by other companies is neither a recommendation, nor an endorsement of the corresponding product, and does not imply that similar products could not be used.