

VESTAKEEP® *Care* for medical applications

Evonik markets a line of VESTAKEEP® *Care* resins and stock shapes especially designed for the medical industry.

VESTAKEEP® *Care*-Grades

The good biocompatibility, processability and the option to pigment make the VESTAKEEP® *Care*-Grades an ideal material for the fabrication of medical devices with short time contact to human blood, tissue or bone for up to 30 days.

Test reports available for VESTAKEEP® *Care*

Standard	Description
ASTM F756-08	Hemocompatibility
ISO 10993-5	Cytotoxicity
ISO 10993-10	Irritation and Sensitization
ISO 10993-11	Acute Systemic Toxicity
USP Class VI	Acute Systemic Toxicity Intracutaneous Reactivity Muscle Implantation

Processing of VESTAKEEP® *Care*

VESTAKEEP® *Care* resins can be processed using all conventional melt processing techniques such as injection moulding, extrusion, and compression moulding. Stock shapes can be machined by all conventional equipment like turning or milling machines.

Availability and Delivery of VESTAKEEP® *Care*

We deliver our VESTAKEEP® *Care* polymers as resins and rods. They are available in carton boxes with polyethylene inliners with a content of 25 kg (granules).

VESTAKEEP® *Care* M40 R rods can be produced in various diameters ranging from 6 mm up to 100 mm. The standard length is 1 m. Other dimensions are also available upon request.

Special high-performance grades

Because of their combination of outstanding mechanical properties and their excellent resistance to common cleaning and sterilizing processes, VESTAKEEP® *Care* polymers are designed to develop your next generation medical devices. Key properties are

- Excellent biocompatibility
- Outstanding biostability
- Good resistance to commonly used sterilization methods like autoclaving and others
- Resistance to high-energy radiation such as gamma rays or X-rays
- X-ray transparency, no metal-typical shadows or artefacts in radiographs.
- Good combination of mechanical strength, wear resistance and impact resistance makes PEEK a good choice for high strength medical devices
- Good dimensional stability allows for manufacturing of high-precision parts
- Good electrical properties, especially electrical insulation, is important for medical equipment – for example HF endoscopes

Properties of VESTAKEEP® Care

Property		Test method	Unit	M20G	M40G	M33G-HP	M40R
Density	23 °C	ISO 1183	g/cm ³	1.3	1.3	1.3	1.3
Tensile test		ISO 527					
Tensile modulus			MPa	3700	3500	3600	3500
Stress at yield			MPa	100	96	98	110
Strain at yield			%	5.0	5.0	5.0	5.0
Strain at break			%	>20	>20	>20	40
CHARPY impact strength	23 ° -30 °C	ISO 179/1eU	kJ/m ² kJ/m ²	N N	N N	N N	N N
CHARPY notched impact strength	23 °C -30 °C	ISO 179/1eA	kJ/m ² kJ/m ²	6 C 6 C	7 C 6 C	6 C 6 C	7 C 6 C
VICAT softening temperature	Method A, 10 N Method B, 50 N	ISO 306	°C °C	335 310	335 305		335 305
Linear thermal expansion, longitudinal	23-55°C	ISO 11359	10 ⁻⁴ K ⁻¹	0.6	0.6	0.6	0.6
Relative permittivity	50 Hz 1 MHz	IEC 60250		2.8 2.8	2.8 2.8		2.9 2.8
Electric strength	K20/P50	IEC 60243-1	kV/mm	16	16		25
Comparative tracking index CTI		IEC 60112					
Test solution A				200	200		200
100 drops value				175	175		175
Volume resistivity		IEC 60093	Ohm-cm	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵
Surface resistance		IEC 60093	Ohm	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴
Diff. scanning calorimetry (DSC)		ISO 11357					
Melting temp. 2 nd heating			°C	app 340	app 340	app 340	app 340
Melt volume-flow rate (MVR)	380°C/ 5 kg	ISO 1133	cm ³ / 10min	70	11	20	11
Flammability acc. UL94	3.2 mm	IEC 60695		V-0	V-0	V-0	V-0
Mold shrinkage	in flow direction in transverse direction	ISO 294-4	% %	0.7 1.1	0.9 1.1	0.9 1.1	

N = No break C = Complete break, incl. hinge break H

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