

Product Information

# VESTAKEEP® iC 4506 G

## X-RAY OPAQUE POLYETHER ETHER KETONE FOR LONG TERM IMPLANTABLE MEDICAL DEVICES



VESTAKEEP® iC4506 G is an opaque, natural colored, high viscosity polyether ether ketone (PEEK) resin. It contains 6% barium sulphate to render it X-ray opaque.

### Proven Biocompatibility

VESTAKEEP® iC4506 G is especially designed for long term implantable medical devices.

The compound composition is optimised for high biocompatibility and mechanical, thermal and chemical resistance.

Biocompatibility has been tested following ISO 10993-1 recommendations for permanent tissue/bone contact and USP Class VI.

A summary of biocompatibility is available upon request.

### Biocompatibility reports available for VESTAKEEP® iC4506 G

STANDARD	DESCRIPTION
ISO 10993-12	GC/MS Fingerprint of extractable organic substances
USP CLASS VI	Acute Systemic Toxicity Intracutaneous Reactivity Muscle Implantation
ISO 10993-5	Cytotoxicity
ISO 10993-10	Irritation: Intracutaneous Reactivity
ISO 10993-10	Sensitization: Maximization test according to Magnusson and Kligman
ISO 10993-11	Subchronic Systemic Toxicity
ISO 10993-3	Genotoxicity: Ames Test
ISO 10993-3	Genotoxicity: Chromosome Aberration test
ISO 10993-3	Genotoxicity: Mouse Lymphoma test
ISO 10993-6	Test for local effects after Implantation in bone (180 days)
ISO 10993-11	Material-mediated pyrogenes

### Processing of VESTAKEEP® i-Grades

VESTAKEEP® iC4506 G can be processed by common melt processing techniques like injection molding and extrusion. For injection molding, we recommend a melt temperature between 380°C and 400°C. The mold temperature should be within a temperature range from 160°C to 200°C, preferably 180°C.

### Delivery of VESTAKEEP® i-Grades

VESTAKEEP® iC4506 G is supplied as cylindrical pellets in hobbcks containing 5 kg or 10kg. Polyethylene bags are used as primary packaging.

The results shown have been generated from a low number of production lots. Therefore, they are preliminary and not yet the result of a statistical evaluation. Therefore they must not be used to establish specifications.

The values presented are typical or average values, they do not constitute a specification.



FOR FURTHER INFORMATION PLEASE CONTACT US AT [EVONIK-HP@EVONIK.COM](mailto:EVONIK-HP@EVONIK.COM)  
OR VISIT OUR PRODUCT AT [WWW.EVONIK.COM/MEDICAL-TECHNOLOGY](http://WWW.EVONIK.COM/MEDICAL-TECHNOLOGY)

## Key Features

### Industrial Sector

Medical Devices

### Processing

Injection molding

### Delivery form

Pellets, Granules

### Optics

Opaque

### Resistance to

Heat (thermal stability), Hydrolysis / hot water, UV / light / weathering

### Electrical

Insulating

### Conformity

Biocompatibility, Medical application

### Additives

Mineral fillers

## Mechanical properties ISO

	dry	Unit	Test Standard
Tensile modulus	<b>3600</b>	MPa	ISO 527
Tensile strength	<b>95</b>	MPa	ISO 527
Yield stress	<b>95</b>	MPa	ISO 527
Yield strain	<b>5</b>	%	ISO 527
Strain at break, B	<b>10</b>	%	ISO 527
Charpy impact strength, +23°C	<b>7</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Type of failure	<b>C</b>	-	-

## Thermal properties

	dry	Unit	Test Standard
Melting temperature	<b>340</b>	°C	ISO 11357-1/-3
Glass transition temperature, 2 nd heating, onset	<b>145</b>	°C	ISO 11357
Glass transition temperature, 2 nd heating, midpoint	<b>155</b>	°C	ISO 11357
Recrystallization temperature, 10 K/min	<b>285<sup>[e]</sup></b>	°C	ISO 11357
Melting Temperature	<b>340</b>	°C	ASTM D 3418

e: 20 K/minute



**Physical properties**

	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Density	<b>1350</b>	kg/m <sup>3</sup>	ISO 1183
Water absorption	<b>0.4</b>	%	Sim. to ISO 62
Density	<b>1350</b>	kg/m <sup>3</sup>	ASTM D 792

**Rheological properties**

	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Melt volume-flow rate, MVR	<b>10</b>	cm <sup>3</sup> /10min	ISO 1133
Temperature	<b>380</b>	°C	-
Load	<b>5</b>	kg	-

**Test specimen production**

	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Injection Molding, melt temperature	<b>380</b>	°C	ISO 294
Injection Molding, mold temperature	<b>180</b>	°C	ISO 294
Injection Molding, injection velocity	<b>200</b>	mm/s	ISO 294

**Characteristics**
**Applications**

Medical implants

**Special Characteristics**

Phosphorus-free, PTFE-free, High impact strength, Semi-crystalline, High viscosity, Self-extinguishing

**Features**

Low odor, Non-corrosive

**Color**

Natural color

**Additives**

Inorganic fillers

**Chemical Resistance**

Acid resistance, Solvent resistance, Oxidation resistance, Radiation resistance, General chemical resistance



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