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 hobbocks containing 5 kg or 10kg. Polyethylene bags are used as primary packaging.

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	**522000**	psi	ISO 527
Tensile strength	**13800**	psi	ISO 527
Yield stress	**13800**	psi	ISO 527
Yield strain	**5**	%	ISO 527
Strain at break, B	**10**	%	ISO 527
Charpy impact strength, +23°C	**3.33**	ftlb/in^2	ISO 179/1eU
Type of failure	**C**	-	-

Thermal properties	dry	Unit	Test Standard
Melting temperature	**644**	°F	ISO 11357-1/-3
Glass transition temperature, 2 nd heating, onset	**293**	°F	ISO 11357
Glass transition temperature, 2 nd heating, midpoint	**311**	°F	ISO 11357
Recrystallization temperature, 10 K/min	**545**[e]	°F	ISO 11357
Melting Temperature	**644**	°F	ASTM D 3418

e: 20 K/minute

VESTAKEEP®

Physical properties	dry	Unit	Test Standard
Density	**1.35**	g/cm³	ISO 1183
Water absorption	**0.4**	%	Sim. to ISO 62
Density	**1.35**	g/cm³	ASTM D 792

Rheological properties	dry	Unit	Test Standard
Melt volume-flow rate, MVR	**10**	cm³/10min	ISO 1133
Temperature	**380**	°C	-
Load	**5**	kg	-

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	**716**	°F	ISO 294
Injection Molding, mold temperature	**356**	°F	ISO 294
Injection Molding, injection velocity	**7.87**	in/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