Product Information

VESTAKEEP® DC 4450 G

TOOTH-COLORED POLYETHER ETHER KETONE FOR DENTAL APPLICATIONS

VESTAKEEP® DC4450 G is a tooth-colored, high viscosity polyether ether ketone (PEEK) resin that is especially designed for removable and fixed dentures, crowns and bridges.

Biocompatibility of VESTAKEEP® Dental

For VESTAKEEP® DC4450 G, biocompatibility has been tested according to ISO 10993-1 recommendations for permanent mucous membrane contact. The compound composition is optimised for high biocompatibility and superior mechanical, thermal and chemical resistance.

Biocompatibility test reports available for VESTAKEEP® DC4450 G

Standard	Description
ISO 10993-03	Genotoxicity: Salmonella Typhimurium Reverse Mutation Test (Ames Test)
ISO 10993-05	Cytotoxicity: Quantitative Growth Inhibition Test
ISO 10993-10	Irritation: Intracutaneous Reactivity
ISO 10993-10	Sensitization: Local Lymph Node Assay
ISO 10993-11	Acute Systemic Toxicity
ISO 10993-11	Subacute / Subchronic Toxicity 14 days
ISO 10993-18	Extraction Tests
USP Class VI	Acute Systemic Toxicity Intracutaneous Reactivity Muscle Implantation

Processing of VESTAKEEP® Dental

VESTAKEEP® DC4450 G can be processed by common melt processing techniques like injection molding and extrusion.

For injection molding, we recommend a melt temperature in the 380°C to 400°C range. The mold temperature should be within 160°C to 200°C, preferably 180°C.

Delivery of VESTAKEEP® Dental

VESTAKEEP® DC4450 G is supplied as granules in 25 kg boxes with moisture-proof polyethylene liners.

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
OR VISIT OUR PRODUCT AT WWW.EVONIK.COM/MEDICAL-TECHNOLOGY

Key Features

Industrial Sector
Medical Devices

Optics
Opaque

Processing
Injection molding, Extrusion

Delivery form
Pellets, Granules

Resistance to
Heat (thermal stability), Hydrolysis / hot water, Wear / abrasion, Fatigue resistance

Conformity
Biocompatibility, Medical application

Mechanical properties ISO	dry	Unit	Test Standard
Tensile modulus	**4100**	MPa	ISO 527
Tensile strength	**95**	MPa	ISO 527
Yield stress	**95**	MPa	ISO 527
Yield strain	**4.8**	%	ISO 527
Stress at break	**75**	MPa	ISO 527
Nominal strain at break, tB	**20**	%	ISO 527
Charpy impact strength, +23°C	**N**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**N**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, +23°C	**6.8**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-

Thermal properties	dry	Unit	Test Standard
Melting temperature	**337**	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**154**	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**155**	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**210**	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**335**	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**305**	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**45**	E-6/K	ISO 11359-1/-2
Melting Temperature	**337**	°C	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	**1510**	kg/m³	ISO 1183

Water absorption	**0.4**	%	Sim. to ISO 62
Humidity absorption	**0.3**	%	Sim. to ISO 62
Density	**1510**	kg/m³	ASTM D 792

Electrical properties	**dry**	**Unit**	**Test Standard**
Volume resistivity, V	**>1E13**	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	**>1E15**	Ohm per square	IEC 62631-3-2
Relative permittivity, 50Hz	**3.5**	-	IEC 62631-2-1
Relative permittivity, 100Hz	**3.6**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.6**	-	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	**29.3**	kV/mm	IEC 60243-1

Optical properties	**dry**	**Unit**	**Test Standard**
Color L	**86**	-	CIE
Color a	**1.5**	-	CIE
Color b	**16**	-	CIE

Rheological properties	**dry**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**11**	cm³/10min	ISO 1133
Temperature	**380**	°C	-
Load	**5**	kg	-
Molding shrinkage, parallel	**0.9**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.0**	%	ISO 294-4, 2577
Mold temperature	**180**	°C	-
Melt temperature	**380**	°C	-

Polymer analytics	**dry**	**Unit**	**Test Standard**
Ash content	**21.2**	%	ISO 3451

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	**380**	°C	ISO 294
Injection Molding, mold temperature	**180**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294

Characteristics

Special Characteristics
Semi-crystalline, High viscosity

Regulatory
US Pharmacopeia Class VI conformity

Color
Tooth-colored

Chemical Resistance
Acid resistance, Alkali resistance, Solvent resistance, Grease resistance, Hydrolytically stable, Oxidation resistance, General chemical resistance

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