Product Information

VESTAKEEP® D 4 G

NATURAL COLORED POLYETHER ETHER KETONE FOR DENTAL APPLICATIONS

VESTAKEEP® D4 G is natural colored, high viscosity polyether ether ketone (PEEK) that is especially designed for removable and fixed dentures, crowns and bridges.

Biocompatibility of VESTAKEEP® Dental

For VESTAKEEP® D4 G, biocompatibility has been tested following ISO 10993-1 recommendations for permanent mucous membrane contact.

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

Biocompatibility test reports available for VESTAKEEP® D4 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® D4 G can be processed by common melt processing techniques like injection molding and extrusion.
For injection molding, we recommend melt temperatures 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® D4 G is supplied as granules in 25 kg boxes with moisture-proof polyethylene liners.

VESTAKEEP®

Key Features

Industrial Sector
Medical Devices

Processing
Injection molding, Extrusion

Delivery form
Pellets, Granules

Optics
Opaque

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

Conformity
Biocompatibility, Medical application

Additives
Unfilled

Mechanical properties ISO	dry	Unit	Test Standard
Tensile modulus	**508000**	psi	ISO 527
Tensile strength	**13900**	psi	ISO 527
Yield stress	**13900**	psi	ISO 527
Yield strain	**5**	%	ISO 527
Strain at break, B	**30**	%	ISO 527
Charpy impact strength, +23°C	**N**	ftlb/in^2	ISO 179/1eU
Charpy impact strength, -30°C	**N**	ftlb/in^2	ISO 179/1eU
Charpy notched impact strength, +23°C	**3.81**	ftlb/in^2	ISO 179/1eA
Type of failure	**C**	-	-
Charpy notched impact strength, -30°C	**3.33**	ftlb/in^2	ISO 179/1eA
Type of failure	**C**	-	-
Flexural modulus, 23°C	**508000**	psi	ISO 178
Flexural stress at conv. deflection, 23°C	**16000**	psi	ISO 178

Thermal properties	dry	Unit	Test Standard
Melting temperature	**644**	°F	ISO 11357-1/-3
Glass transition temperature, DSC	**307**	°F	ISO 11357-1/-2
Glass transition temperature, 2 nd heating, onset	**293**	°F	ISO 11357
Glass transition temperature, 2 nd heating, midpoint	**302**	°F	ISO 11357

Recrystallization temperature, 10 K/min	**545**	°F	ISO 11357
Temp. of deflection under load A, 1.80 MPa	**311**	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**410**	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**635**	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**581**	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**2.5E-5**	in/in/°F	ISO 11359-1/-2
Melting Temperature	**644**	°F	ASTM D 3418

Physical properties	**dry**	**Unit**	**Test Standard**
Density	**1.3**	g/cm^3	ISO 1183
Water absorption	**0.4**	%	Sim. to ISO 62
Density	**1.3**	g/cm^3	ASTM D 792

Optical properties	**dry**	**Unit**	**Test Standard**
Color L	**60**	-	CIE
Color a	**2.6**	-	CIE
Color b	**8.5**	-	CIE

Rheological properties	**dry**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**12**	cm^3/10min	ISO 1133
Temperature	**380**	°C	-
Load	**5**	kg	-
Molding shrinkage, parallel	**0.9**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.1**	%	ISO 294-4, 2577
Mold temperature	**356**	°F	-
Melt temperature	**698**	°F	-

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

Processing
Powder bed fusion

Special Characteristics
Semi-crystalline

Regulatory
US Pharmacopeia Class VI conformity

Color
Natural color

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