

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.

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

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	3500	MPa	ISO 527
Tensile strength	96	MPa	ISO 527
Yield stress	96	MPa	ISO 527
Yield strain	5	%	ISO 527
Strain at break, B	30	%	ISO 527
Charpy impact strength, +23°C	N	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	8	kJ/m ²	ISO 179/1eA
Type of failure	C	-	-
Charpy notched impact strength, -30°C	7	kJ/m ²	ISO 179/1eA
Type of failure	C	-	-
Flexural modulus, 23°C	3500	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	110	MPa	ISO 178

Thermal properties	dry	Unit	Test Standard
Melting temperature	340	°C	ISO 11357-1/-3
Glass transition temperature, DSC	153	°C	ISO 11357-1/-2
Glass transition temperature, 2 nd heating, onset	145	°C	ISO 11357
Glass transition temperature, 2 nd heating, midpoint	150	°C	ISO 11357

Recrystallization temperature, 10 K/min	285	°C	ISO 11357
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	340	°C	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	1300	kg/m ³	ISO 1183
Water absorption	0.4	%	Sim. to ISO 62
Density	1300	kg/m 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	180	°C	-
Melt temperature	370	°C	-

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

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