Product Information

VESTAKEEP® 4000 CC20

CERAMIC-FILLED (20%), HIGH VISCOSITY POLYETHER ETHER KETONE

VESTAKEEP® 4000 CC20 is a ceramic-filled (20%) polyether ether ketone for injection molding and extrusion.

The semi-crystalline polymer features superior mechanical, thermal, and chemical resistance. Parts made from VESTAKEEP® 4000 CC20 are of low flammability.

VESTAKEEP® 4000 CC20 can be processed on common injection molding machines for thermoplastics.

We recommend a melt temperature of 380°C to 400°C during the injection molding process. The mold temperature should be in a range of 160°C to 200°C, preferably 180°C.

VESTAKEEP® 4000 CC20 is supplied as cylindrical pellets in 25 kg boxes with moisture-proof polyethylene liners.

Inside the original and undamaged packaging, the product has a shelf life of at least 2 years when stored in dry rooms at temperatures not exceeding 30°C.

Pigmentation may affect the values.

For information about processing of VESTAKEEP® 4000 CC20, please follow the general recommendations in our brochure "VESTAKEEP® PEEK Processing Guidelines".

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.INDUSTRIAL.VESTAKEEP.COM

Key Features

Industrial Sector
Automotive and Mobility, Industry and Engineering

Delivery form
Pellets, Granules

Processing
Injection molding, Extrusion

Resistance to
Heat (thermal stability), Fire / burn

Mechanical properties ISO	dry	Unit	Test Standard
Tensile modulus	**4300**	MPa	ISO 527
Tensile strength	**95**	MPa	ISO 527
Yield stress	**95**	MPa	ISO 527

Yield strain	**5**	%	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 notched impact strength, +23°C	**7**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-
Charpy notched impact strength, -30°C	**7**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-

Thermal properties	**dry**	**Unit**	**Test Standard**
Melting temperature	**340**	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**153**	°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	**340**	°C	ASTM D 3418

Physical properties	**dry**	**Unit**	**Test Standard**
Density	**1490**	kg/m³	ISO 1183
Water absorption	**0.4**	%	Sim. to ISO 62
Moisture content	**0.02**	Gew.-%	ISO 15512
Density	**1490**	kg/m³	ASTM D 792

Burning Behav.	**dry**	**Unit**	**Test Standard**
Burning behav. at 1.5 mm nom. thickn.	**V-0**	class	IEC 60695-11-10
Thickness tested	**1.6**	mm	-

Electrical properties	dry	Unit	Test Standard
Relative permittivity, 1MHz	**3.8**	-	IEC 62631-2-1
Dissipation factor, 1MHz	**200**	E-4	IEC 62631-2-1

Rheological properties	dry	Unit	Test Standard
Melt volume-flow rate, MVR	**10**	cm^3/10min	ISO 1133
Temperature	**380**	°C	-
Load	**5**	kg	-
Molding shrinkage, parallel	**0.7**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.0**	%	ISO 294-4, 2577

Polymer analytics	dry	Unit	Test Standard
Ash content	**19.7**	%	ISO 3451

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	**385**	°C	ISO 294
Injection Molding, mold temperature	**180**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294
Injection Molding, pressure at hold	**120**	MPa	ISO 294

Characteristics

Applications
Electrical and Electronical

Color
Natural color

Special Characteristics
Semi-crystalline, High heat resistant, High viscosity

Chemical Resistance
General chemical resistance

Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass) (23°C)
- ✔ Citric Acid solution (10% by mass) (23°C)

✔	Hydrochloric Acid (36% by mass) (23°C)
✖	Nitric Acid (40% by mass) (23°C)
✔	Sulfuric Acid (5% by mass) (23°C)
✔	Chromic Acid solution (40% by mass) (23°C)

Bases

✔	Sodium Hydroxide solution (35% by mass) (23°C)
✔	Sodium Hydroxide solution (1% by mass) (23°C)
✔	Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

✔	Isopropyl alcohol (23°C)
✔	Methanol (23°C)
✔	Ethanol (23°C)

Hydrocarbons

✔	n-Hexane (23°C)
✔	Toluene (23°C)
✔	iso-Octane (23°C)

Ketones

✔	Acetone (23°C)

Ethers

✔	Diethyl ether (23°C)

Mineral oils

✔	SAE 10W40 multigrade motor oil (23°C)
✔	Insulating Oil (23°C)

Standard Fuels

✔	Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
✔	Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
✔	Diesel fuel (pref. ISO 1817 Liquid F) (23°C)

Salt solutions

✔	Sodium Chloride solution (10% by mass) (23°C)
✔	Sodium Hypochlorite solution (10% by mass) (23°C)
✔	Sodium Carbonate solution (20% by mass) (23°C)

- ✔ Sodium Carbonate solution (2% by mass) (23°C)
- ✔ Zinc Chloride solution (50% by mass) (23°C)

Other

- ✔ Ethyl Acetate (23°C)
- ✔ Hydrogen peroxide (23°C)
- ✔ Ethylene Glycol (50% by mass) in water (108°C)
- ✔ Water (23°C)
- ✔ Deionized water (90°C)

Rheological calculation properties	dry	Unit	Test Standard
Min. mold temperature	**160**	°C	-
Max. mold temperature	**200**	°C	-
Min. melt temperature	**380**	°C	-
Max. melt temperature	**400**	°C	-

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