Product Information

VESTAKEEP® 2000 CF30

CARBON FIBER-REINFORCED, MEDIUM VISCOSITY POLYETHER ETHER KETONE

VESTAKEEP® 2000 CF30 is a medium-viscosity, carbon fiber-reinforced (30%) polyether ether ketone for injection molding.

The semi-crystalline polymer features superior, mechanical, thermal and chemical resistance. Parts made from VESTAKEEP® 2000 CF30 are of low flammability.

VESTAKEEP® 2000 CF30 can be processed by common injection machines for thermoplastics.

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

VESTAKEEP® 2000 CF30 is supplied as granules 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.

Pigmention may effect values.

For information about processing of VESTAKEEP® 2000 CF30, 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.

Key Features

Industrial Sector
Aircraft and Aerospace, Industry and Engineering

Processing
Injection molding

Delivery form
Pellets, Granules

Resistance to
Fire / burn

Additives
Carbon fibers

Mechanical properties ISO	dry	Unit	Test Standard
Tensile modulus	**24000**	MPa	ISO 527

Tensile strength	**251**	MPa	ISO 527
Stress at break	**251**	MPa	ISO 527
Strain at break, B	**1.85**	%	ISO 527
Poisson's ratio, 23°C	**0.44**	-	ISO 527
Anisotropy ratio, tensile modulus	**0.52**	-	-
Anisotropy ratio, tensile strength	**0.63**	-	-
Charpy impact strength, +23°C	**51**	kJ/m²	ISO 179/1eU
Type of failure	**C**	-	-
Charpy impact strength, -30°C	**45**	kJ/m²	ISO 179/1eU
Type of failure	**C**	-	-
Charpy notched impact strength, +23°C	**8**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-
Charpy notched impact strength, -30°C	**8**	kJ/m²	ISO 179/1eA
Type of failure	**C**	-	-
Flexural modulus, 23°C	**21500**	MPa	ISO 178
Flexural stress at break, 23°C	**390**	MPa	ISO 178
Flexural strain at break, 23°C	**2.1**	%	ISO 178

Mechanical properties ASTM	**dry**	**Unit**	**Test Standard**
tensile modulus, annealed	**22752.7**	MPa	ASTM D 638
Stress at break, 23°C, annealed	**2**	%	ASTM D 638
Strain at break, 23°C, annealed	**248000**	Pa	ASTM D 638

Thermal properties	**dry**	**Unit**	**Test Standard**
Melting temperature	**340**	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**146**	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**330**	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**340**	°C	ISO 75-1/-2

Vicat softening temperature A, 10 N, 50 K/h	**343**	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**340**	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**10**	E-6/K	ISO 11359-1/-2
Melting Temperature	**340**	°C	ASTM D 3418

Physical properties	**dry**	**Unit**	**Test Standard**
Density	**1410**	kg/m³	ISO 1183
Water absorption	**0.4**	%	Sim. to ISO 62
Density	**1410**	kg/m³	ASTM D 792

Burning Behav.	**dry**	**Unit**	**Test Standard**
UL Yellow Card available	yes	-	-
Burning behav. at 1.5 mm nom. thickn.	**V-0**	class	IEC 60695-11-10
Thickness tested	**1.6**	mm	-
Yellow Card available	yes	-	-
Oxygen index	**47**	%	ISO 4589-1/-2
Limiting Oxygen Index	**47**	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	**960**	°C	IEC 60695-2-12
GWFI - thickness tested	**2**	mm	-
Glow Wire Ignition Temperature (GWIT)	**875**	°C	IEC 60695-2-13
GWIT - thickness tested	**2**	mm	-

Electrical properties	**dry**	**Unit**	**Test Standard**
Volume resistivity, V	**10000**	Ohm*m	IEC 62631-3-1
Relative permittivity, 1MHz	**17**	-	IEC 62631-2-1
Dissipation factor, 1MHz	**2300**	E-4	IEC 62631-2-1

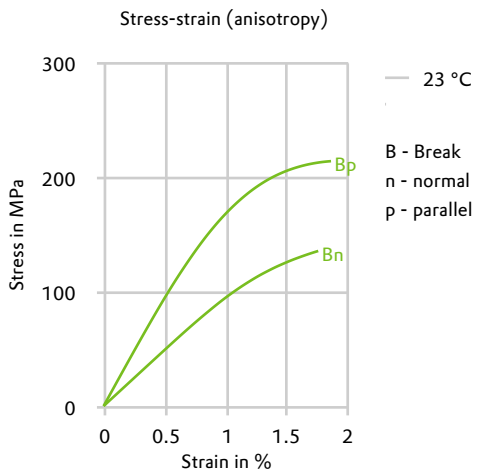
Rheological properties	**dry**	**Unit**	**Test Standard**
Melt volume-flow rate, MVR	**19**	cm³/10min	ISO 1133

Temperature	**400**	°C	-
Load	**5**	kg	-
Molding shrinkage, parallel	**0**	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.4**	%	ISO 294-4, 2577
Mold temperature	**180**	°C	-
Melt temperature	**390**	°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
Injection Molding, pressure at hold	**120**	MPa	ISO 294

Diagrams

Stress-strain (anisotropy)



Characteristics

Applications
Electrical and Electronical

Special Characteristics
High heat resistant

Color
Natural color

Delivery form
Cylindrical pellets

Chemical Resistance
Aging 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	-