

Product Information

VESTAKEEP® 4000 CF30

CARBON FIBER-REINFORCED (30%), HIGH VISCOSITY POLYETHER ETHER KETONE



VESTAKEEP® 4000 CF30 is a 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® 4000 CF30 are of low flammability.

VESTAKEEP® 4000 CF30 can be processed by common injection molding 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® 4000 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.

Pigmentation may affect values.

Key Features

Industrial Sector

Aircraft and Aerospace, Industry and Engineering, Energy, Oil and Gas

Resistance to

Heat (thermal stability), Fire / burn

Processing

Injection molding, Extrusion

Additives

Carbon fibers

Delivery form

Pellets, Granules

Mechanical properties ISO

Tensile modulus

dry

23000

Unit

MPa

Test Standard

ISO 527

Tensile strength	240	MPa	ISO 527
Stress at break	240	MPa	ISO 527
Strain at break, B	2	%	ISO 527
Charpy impact strength, +23°C	60	kJ/m ²	ISO 179/1eU
Type of failure	C	-	-
Charpy impact strength, -30°C	60	kJ/m ²	ISO 179/1eU
Type of failure	C	-	-
Charpy notched impact strength, +23°C	10	kJ/m ²	ISO 179/1eA
Type of failure	C	-	-
Charpy notched impact strength, -30°C	9	kJ/m ²	ISO 179/1eA
Type of failure	C	-	-

Mechanical properties ASTM	dry	Unit	Test Standard
tensile modulus, annealed	23304.2	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
Temp. of deflection under load A, 1.80 MPa	325	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	335	°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	1400	kg/m ³	ISO 1183
Water absorption	0.4	%	Sim. to ISO 62

Moisture content	0.04	Gew.-%	ISO 15512
Density	1400	kg/m ³	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	-
Burning behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.8	mm	-
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
Glow Wire Ignition Temperature (GWIT)	850	°C	IEC 60695-2-13

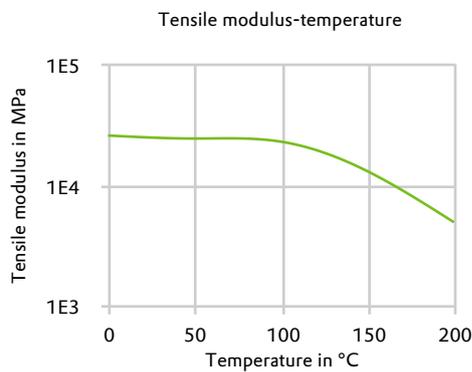
Electrical properties	dry	Unit	Test Standard
Volume resistivity, V	10000	Ohm*m	IEC 62631-3-1
Surface resistivity, E	1000000	Ohm	IEC 62631-3-2
Relative permittivity, 1MHz	17	-	IEC 62631-2-1
Dissipation factor, 1MHz	230	E-4	IEC 62631-2-1

Rheological properties	dry	Unit	Test Standard
Melt volume-flow rate, MVR	20	cm ³ /10min	ISO 1133
Temperature	380	°C	-
Load	21.6	kg	-
Melt volume-flow rate, MVR	23	cm ³ /10min	ISO 1133
Temperature	400	°C	-
Load	21.6	kg	-
Molding shrinkage, parallel	0	%	ISO 294-4, 2577
Molding shrinkage, normal	0.4	%	ISO 294-4, 2577

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	420	°C	ISO 294
Injection Molding, mold temperature	200	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	120	MPa	ISO 294

Diagrams

Tensile modulus-temperature



Characteristics

Applications

Electrical and Electronical, Encapsulation

Chemical Resistance

General chemical resistance

Color

Natural color

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	-