

Product Information

VESTAKEEP® 4000 GF30

GLASS FIBER-REINFORCED (30%) POLYETHER ETHER KETONE



VESTAKEEP® 4000 GF30 is a glass 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 GF30 are of low flammability.

VESTAKEEP® 4000 GF30 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 within a range of 160°C to 200°C, preferably 180°C.

VESTAKEEP® 4000 GF30 is supplied as cylindrical pellets in 25kg 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.

Key Features

Industrial Sector

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

Resistance to

Heat (thermal stability), Fire / burn

Processing

Injection molding, Extrusion

Additives

Glass fibers

Delivery form

Pellets, Granules

Mechanical properties ISO

Tensile modulus

dry

1.6E6

Unit

psi

Test Standard

ISO 527

Tensile strength	23200	psi	ISO 527
Stress at break	23200	psi	ISO 527
Strain at break, B	2	%	ISO 527
Poisson's ratio, 23°C	0.41	-	ISO 527
Charpy impact strength, +23°C	33.3	ftlb/in ²	ISO 179/1eU
Type of failure	C	-	-
Charpy impact strength, -30°C	35.7	ftlb/in ²	ISO 179/1eU
Type of failure	C	-	-
Charpy notched impact strength, +23°C	5.23	ftlb/in ²	ISO 179/1eA
Type of failure	C	-	-
Charpy notched impact strength, -30°C	4.28	ftlb/in ²	ISO 179/1eA
Type of failure	C	-	-

Thermal properties	dry	Unit	Test Standard
Melting temperature	644	°F	ISO 11357-1/-3
Temp. of deflection under load A, 1.80 MPa	594	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	635	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	644	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	635	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	1.67E-5	in/in/°F	ISO 11359-1/-2
Melting Temperature	644	°F	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	1.5	g/cm ³	ISO 1183
Water absorption	0.4	%	Sim. to ISO 62
Density	1.5	g/cm 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	0.0630	in	-
Burnin behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.1260	in	-
Oxygen index	45	%	ISO 4589-1/-2
Limiting Oxygen Index	45	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	1760	°F	IEC 60695-2-12
GWFI - thickness tested	0.0787	in	-
Glow Wire Ignition Temperature (GWIT)	1520	°F	IEC 60695-2-13
GWIT - thickness tested	0.0787	in	-

Electrical properties	dry	Unit	Test Standard
Volume resistivity, V	>1E13	Ohm*m	IEC 62631-3-1
Surface resistivity, E	1E15	Ohm	IEC 62631-3-2
Surface resistance, RSD	1E14	Ohm	IEC 62631-3-2
Relative permittivity, 1MHz	3.3	-	IEC 62631-2-1
Dissipation factor, 1MHz	40	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/P50	406	V/mil	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	200	-	IEC 60112
Assessment of the insulation group	III a	-	DIN EN 60664-1

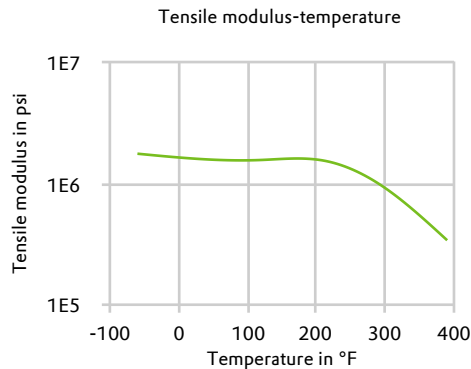
Rheological properties	dry	Unit	Test Standard
Melt volume-flow rate, MVR	32	cm ³ /10min	ISO 1133
Temperature	400	°C	-
Load	21.6	kg	-
Melt volume-flow rate, MVR	2	cm ³ /10min	ISO 1133
Temperature	716	°F	-

Load	11	lb	-
Molding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7	%	ISO 294-4, 2577
Mold temperature	356	°F	-
Melt temperature	716	°F	-

Test specimen production	dry	Unit	Test Standard
Injection Molding, melt temperature	752	°F	ISO 294
Injection Molding, mold temperature	356	°F	ISO 294
Injection Molding, injection velocity	7.87	in/s	ISO 294
Injection Molding, pressure at hold	17400	psi	ISO 294

Diagrams

Tensile modulus-temperature



Characteristics

Applications

Electrical and Electronical, Encapsulation

Color

Natural color

Special Characteristics

Low warpage / Low shrinkage

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	320	°F	-
Max. mold temperature	392	°F	-
Min. melt temperature	716	°F	-
Max. melt temperature	752	°F	-