

Product Information

**VESTAKEEP® 2000 G**

**MEDIUM VISCOSITY, UNREINFORCED POLYETHER ETHER KETONE**



VESTAKEEP® 2000 G is a medium viscosity, unreinforced polyether ether ketone for injection molding.

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

VESTAKEEP® 2000 G can be processed on common injection molding machines for thermoplastics.

We recommend a melt temperature between 360°C and 380°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 G 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.

For information about processing VESTAKEEP® 2000 G, 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**

Automotive and Mobility, Aircraft and Aerospace, Industry and Engineering, Energy, Oil and Gas, Optics, Sports and Lifestyle

**Processing**

Injection molding, Extrusion

**Optics**

X-ray transparent

**Resistance to**

Heat (thermal stability), Fire / burn, Fatigue resistance

**Conformity**

Food contact

**Additives**

Unfilled

**Mechanical properties ISO**

Tensile modulus

dry

**3700**

Unit

MPa

Test Standard

ISO 527

Tensile strength	<b>100</b>	MPa	ISO 527
Yield stress	<b>100</b>	MPa	ISO 527
Yield strain	<b>5</b>	%	ISO 527
Stress at break	<b>70</b>	MPa	ISO 527
Nominal strain at break, tB	<b>20</b>	%	ISO 527
Poisson's ratio, 23°C	<b>0.40</b>	-	ISO 527
Charpy impact strength, +23°C	<b>N</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	<b>N</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	<b>6</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Type of failure	<b>C</b>	-	-
Charpy notched impact strength, -30°C	<b>6</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Type of failure	<b>C</b>	-	-
Flexural modulus, 23°C	<b>3600</b>	MPa	ISO 178
Flexural stress at conv. deflection, 23°C	<b>117</b>	MPa	ISO 178

<b>Thermal properties</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Melting temperature	<b>340</b>	°C	ISO 11357-1/-3
Glass transition temperature, DSC	<b>150</b>	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	<b>155</b>	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	<b>205</b>	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	<b>335</b>	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	<b>310</b>	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	<b>60</b>	E-6/K	ISO 11359-1/-2
Melting Temperature	<b>340</b>	°C	ASTM D 3418

<b>Physical properties</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Density	<b>1300</b>	kg/m <sup>3</sup>	ISO 1183
Water absorption	<b>0.5</b>	%	Sim. to ISO 62

Humidity absorption	<b>0.12</b>	%	Sim. to ISO 62
Density	<b>1300</b>	kg/m <sup>3</sup>	ASTM D 792

<b>Burning Behav.</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
UL Yellow Card available	<a href="#">yes</a>	-	-
Burnin behav. at thickness h	<b>V-0</b>	class	IEC 60695-11-10
Thickness tested	<b>3.2</b>	mm	-
Yellow Card available	<a href="#">yes</a>	-	-
Oxygen index	<b>38</b>	%	ISO 4589-1/-2
Limiting Oxygen Index	<b>38</b>	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	<b>960</b>	°C	IEC 60695-2-12
GWFI - thickness tested	<b>2</b>	mm	-
Glow Wire Ignition Temperature (GWIT)	<b>800</b>	°C	IEC 60695-2-13
GWIT - thickness tested	<b>2</b>	mm	-
Hot Wire Ignition (HWI)	<b>1</b>	PL-Klasse	IEC 60695-2-20
HWI - thickness tested	<b>3.2</b>	mm	-

<b>Electrical properties</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Volume resistivity, V	<b>&gt;1E13</b>	Ohm*m	IEC 62631-3-1
Surface resistivity, E	<b>1E15</b>	Ohm	IEC 62631-3-2
Surface resistivity, C, circular electrodes	<b>9E14</b>	Ohm per square	IEC 62631-3-2
Relative permittivity, 100Hz	<b>2.8</b>	-	IEC 62631-2-1
Relative permittivity, 1MHz	<b>2.8</b>	-	IEC 62631-2-1
Dissipation factor, 1MHz	<b>50</b>	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	<b>32.6</b>	kV/mm	IEC 60243-1
Dielectric strength, AC, S20/P50	<b>16</b>	kV/mm	Sim. to IEC 60243-1
CTI, test solution A, 50 drops value	<b>200</b>	-	IEC 60112
Assessment of the insulation group	<b>III a</b>	-	DIN EN 60664-1

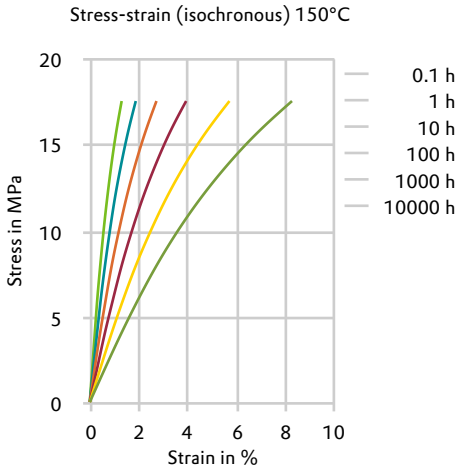
CTI, Performance Level Categories, PLC	<b>3</b>	class	ASTM D 3638
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<b>Rheological properties</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Melt volume-flow rate, MVR	<b>70</b>	cm <sup>3</sup> /10min	ISO 1133
Temperature	<b>380</b>	°C	-
Load	<b>5</b>	kg	-
Molding shrinkage, parallel	<b>1.1</b>	%	ISO 294-4, 2577
Molding shrinkage, normal	<b>1.1</b>	%	ISO 294-4, 2577
Mold temperature	<b>180</b>	°C	-
Melt temperature	<b>360</b>	°C	-

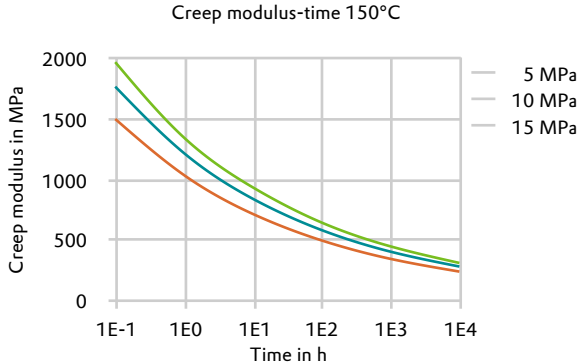
<b>Test specimen production</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Injection Molding, melt temperature	<b>380</b>	°C	ISO 294
Injection Molding, mold temperature	<b>180</b>	°C	ISO 294
Injection Molding, injection velocity	<b>200</b>	mm/s	ISO 294
Injection Molding, pressure at hold	<b>120</b>	MPa	ISO 294

Diagrams

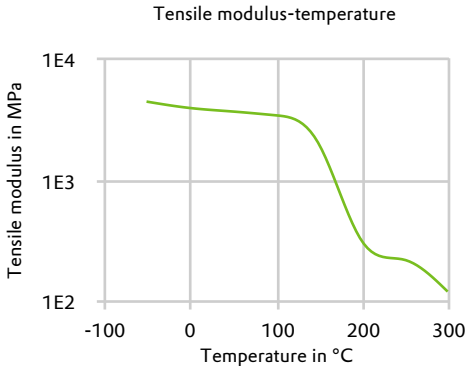
Stress-strain (isochronous) 150°C



Creep modulus-time 150°C



Tensile modulus-temperature



### Characteristics

#### Applications

Electrical and Electronical, Encapsulation, (Sun-) glasses, Monofilament

#### Special Characteristics

Halogen-free, Phosphorus-free, PTFE-free, High impact strength, High crystallinity, Environmental stress crack resistance, High heat resistant, Low viscosity, Self-extinguishing

#### Features

Creep resistance, Foamable, Low coefficient of friction, Good adhesion, Weldable, Low smoke, Non-corrosive, Dishwasher detergents resistant, Non-migrating ingredients

#### Regulatory

Water contact KTW-BWGL, Water contact DIN EN 16421

#### Color

Natural color

#### Delivery form

Cylindrical pellets

#### Chemical Resistance

Acid resistance, Alkali resistance, Solvent resistance, Grease resistance, Hydrolytically stable, Oil resistance, Oxidation resistance, Radiation resistance, Stain 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 (38% 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**

	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Min. mold temperature	<b>160</b>	°C	-
Max. mold temperature	<b>200</b>	°C	-
Min. melt temperature	<b>360</b>	°C	-
Max. melt temperature	<b>380</b>	°C	-