

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".

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

| Thermal properties | dry | Unit | Test Standard |
|--|------------|-------------|----------------------|
| Melting temperature | 340 | °C | ISO 11357-1/-3 |
| Glass transition temperature, DSC | 150 | °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 | 205 | °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 | 310 | °C | ISO 306 |
| Coeff. of linear therm. expansion, 23°C to 55 °C, parallel | 60 | E-6/K | ISO 11359-1/-2 |
| Melting Temperature | 340 | °C | ASTM D 3418 |

| Physical properties | dry | Unit | Test Standard |
|----------------------------|-------------|-------------------|----------------------|
| Density | 1300 | kg/m ³ | ISO 1183 |
| Water absorption | 0.5 | % | Sim. to ISO 62 |

| | | | |
|---------------------|-------------|-------------------|----------------|
| Humidity absorption | 0.12 | % | Sim. to ISO 62 |
| Density | 1300 | kg/m ³ | ASTM D 792 |

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

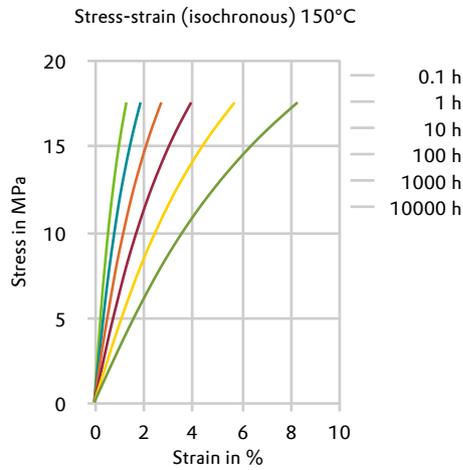
| Electrical properties | dry | Unit | Test Standard |
|---|-----------------|----------------|----------------------|
| Volume resistivity, V | >1E13 | Ohm*m | IEC 62631-3-1 |
| Surface resistivity, E | 1E15 | Ohm | IEC 62631-3-2 |
| Surface resistivity, C, circular electrodes | 9E14 | Ohm per square | IEC 62631-3-2 |
| Relative permittivity, 100Hz | 2.8 | - | IEC 62631-2-1 |
| Relative permittivity, 1MHz | 2.8 | - | IEC 62631-2-1 |
| Dissipation factor, 1MHz | 50 | E-4 | IEC 62631-2-1 |
| Dielectric strength, AC, S20/S20, t. 1 mm | 32.6 | kV/mm | IEC 60243-1 |
| Dielectric strength, AC, S20/P50 | 16 | kV/mm | 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 |
| CTI, Performance Level Categories, PLC | 3 | class | ASTM D 3638 |

| Rheological properties | dry | Unit | Test Standard |
|-----------------------------|------------|------------------------|-----------------|
| Melt volume-flow rate, MVR | 70 | cm ³ /10min | ISO 1133 |
| Temperature | 380 | °C | - |
| Load | 5 | kg | - |
| Molding shrinkage, parallel | 1.1 | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | 1.1 | % | ISO 294-4, 2577 |
| Mold temperature | 180 | °C | - |
| Melt temperature | 360 | °C | - |

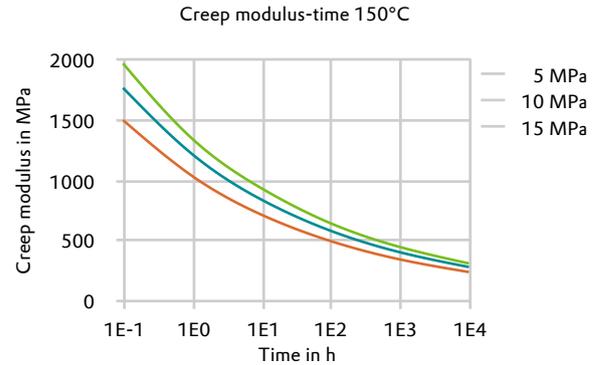
| Test specimen production | dry | Unit | Test Standard |
|---------------------------------------|------------|------|---------------|
| Injection Molding, melt temperature | 380 | °C | ISO 294 |
| Injection Molding, mold temperature | 180 | °C | ISO 294 |
| Injection Molding, injection velocity | 200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

Diagrams

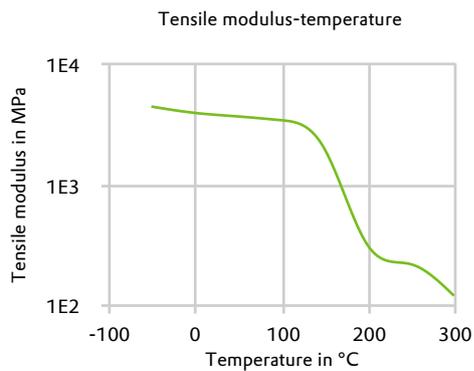
Stress-strain (isochronous) 150°C



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 | dry | Unit | Test Standard |
|------------------------------------|-----|------|---------------|
| Min. mold temperature | 160 | °C | - |
| Max. mold temperature | 200 | °C | - |
| Min. melt temperature | 360 | °C | - |
| Max. melt temperature | 380 | °C | - |