VESTODUR®

Product Information

VESTODUR® 3000

HIGH-VISCOSITY, POLYBUTYLEN TEREPHTHALAT RESIN

VESTODUR® 3000 ist eine high-viscosity, unreinforced, semi-crystalline Polybutylen terephthalat resin for injection molding and extrusion.

The resin features superior thermal and mechanical resistance.

VESTODUR® 3000 is supplied as granules in polyethylene containers.

The use of colorants may affect property values.

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.

Key Features

Industrial Sector
Automotive and Mobility

Processing
Injection molding, Extrusion

Delivery form
Pellets, Granules

Electrical
Insulating

Conformity
Automotive

Additives
Unfilled

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	**2400 / -**	MPa	ISO 527
Tensile strength	**54 / -**	MPa	ISO 527
Yield stress	**54 / -**	MPa	ISO 527
Yield strain	**3 / -**	%	ISO 527
Stress at 50% strain	**32 / -**	MPa	ISO 527

Stress at break	**35 / -**	MPa	ISO 527
Nominal strain at break, tB	**>50 / -**	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	*** / 2600**	MPa	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	*** / 1500**	MPa	ISO 899-1
Charpy impact strength, +23°C	**N / -**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, +23°C	**7 / -**	kJ/m²	ISO 179/1eA
Type of failure	**C / -**	-	-
Charpy notched impact strength, -30°C	**6 / -**	kJ/m²	ISO 179/1eA
Type of failure	**C / -**	-	-
Tensile-impact strength, notched, atN +23°C	**110 / -**	kJ/m²	ISO 8256/1

Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature	**223 / ***	°C	ISO 11357-1/-3
Glass transition temperature, DSC	**45 / ***	°C	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	**55 / ***	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**150 / ***	°C	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**220 / ***	°C	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**180 / ***	°C	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**110 / ***	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	**110 / ***	E-6/K	ISO 11359-1/-2
Melting Temperature	**223**	°C	ASTM D 3418

Physical properties	**dry / cond**	**Unit**	**Test Standard**
Density	**1310 / -**	kg/m³	ISO 1183
Water absorption	**0.5 / ***	%	Sim. to ISO 62
Humidity absorption	**0.1 / ***	%	Sim. to ISO 62
Moisture content	**0.004 / -**	Gew.-%	ISO 15512
Shore D hardness	**77[b] / -**	-	ISO 7619-1

Ball indentation hardness	**150 / -**	MPa	ISO 2039-1
Density	**1310**	kg/m³	ASTM D 792

b: 3 seconds

Burning Behav.	**dry / cond**	**Unit**	**Test Standard**
Burning behav. at 1.5 mm nom. thickn.	**HB / ***	class	IEC 60695-11-10
Thickness tested	**1.6 / ***	mm	-
Burning behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.8 / ***	mm	-
Oxygen index	**23 / ***	%	ISO 4589-1/-2
Limiting Oxygen Index	**23**	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	**800**	°C	IEC 60695-2-12
Glow Wire Ignition Temperature (GWIT)	**800**	°C	IEC 60695-2-13

Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Volume resistivity, V	**>1E13 / -**	Ohm*m	IEC 62631-3-1
Surface resistivity, E	*** / 1E14**	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	**3.3 / -**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.5 / -**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**20 / -**	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	**230 / -**	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	**27 / -**	kV/mm	IEC 60243-1
CTI, test solution A, 50 drops value	**600 / -**	-	IEC 60112
Assessment of the insulation group	**I**	-	DIN EN 60664-1

Optical properties	**dry**	**Unit**	**Test Standard**
Color L	**94.6**	-	CIE
Color a	**-0.52**	-	CIE
Color b	**2.95**	-	CIE

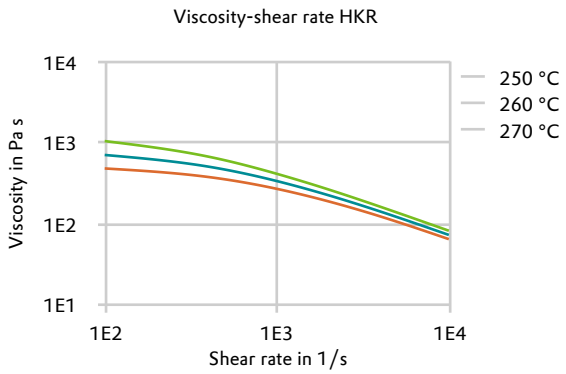
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	**9 / ***	cm^3/10min	ISO 1133
Temperature	**250 / ***	°C	-
Load	**2.16 / ***	kg	-
Molding shrinkage, parallel	**1.7 / ***	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.7 / ***	%	ISO 294-4, 2577
Mold temperature	**80 / ***	°C	-
Melt temperature	**260 / ***	°C	-

Polymer analytics	dry	Unit	Test Standard
Carboxyl end group	**14**	mmol/kg	Evonik standard

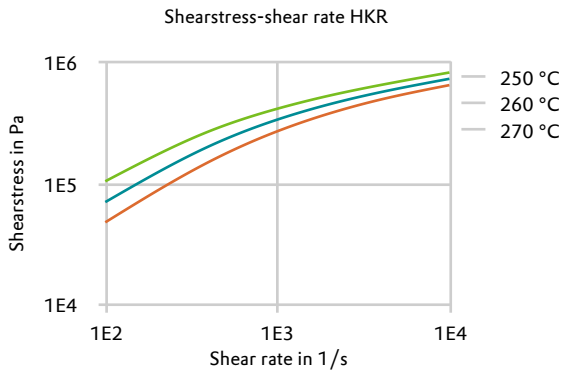
Test specimen production	dry	Unit	Test Standard
Processing conditions acc. ISO	**7792**	-	ISO ....-2
Injection Molding, melt temperature	**260**	°C	ISO 294
Injection Molding, mold temperature	**80**	°C	ISO 294
Injection Molding, injection velocity	**200**	mm/s	ISO 294
Injection Molding, pressure at hold	**70**	MPa	ISO 294

Diagrams

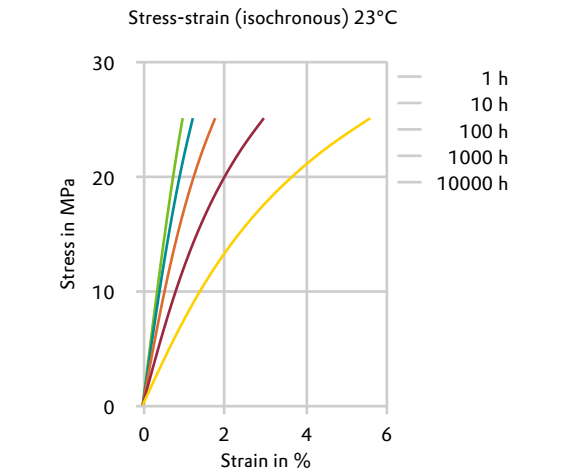
Viscosity-shear rate HKR



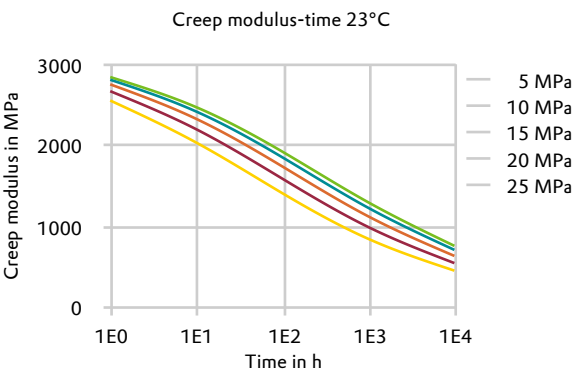
Shearstress-shear rate HKR



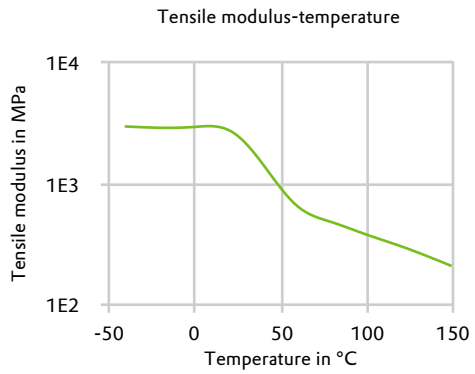
Stress-strain (isochronous) 23°C



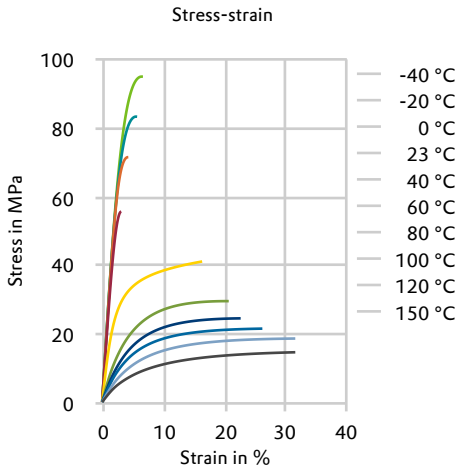
Creep modulus-time 23°C



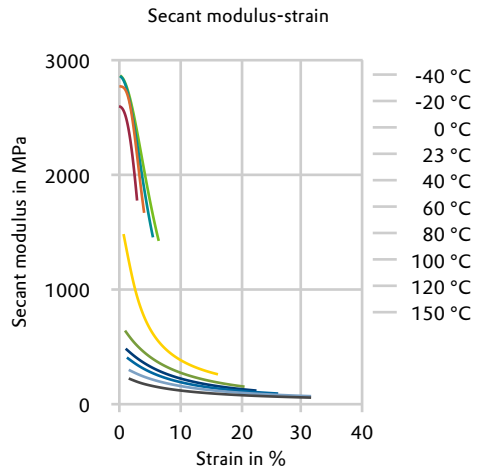
Tensile modulus-temperature



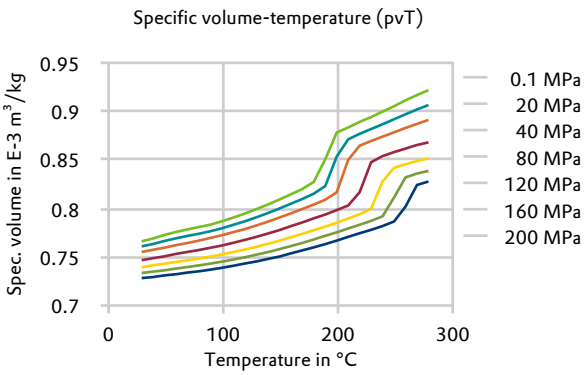
Stress-strain



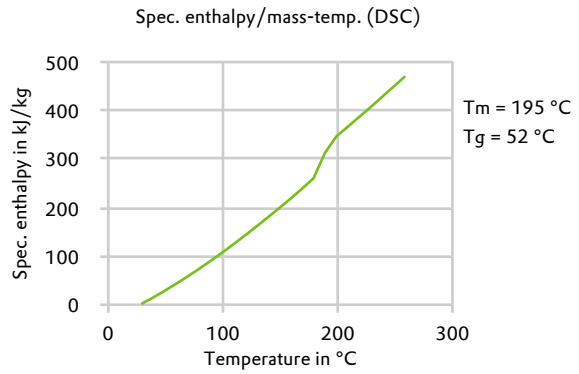
Secant modulus-strain



Specific volume-temperature (pvT)



Spec. enthalpy/mass-temp. (DSC)



Characteristics

Applications
Electrical and Electronical, Fiber optic cable

Color
Natural color

Processing
Film extrusion, Profile extrusion, Sheet extrusion

Chemical Resistance
Hydrolytically stable

Special Characteristics
Environmental stress crack resistance, Light-stabilized, High viscosity

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)

Bases

- ✖ Sodium Hydroxide solution (35% by mass) (23°C)
- ✖ Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

- ✔ Isopropyl alcohol (23°C)
- ✔ Methanol (23°C)
- ✔ Ethanol (23°C)

Hydrocarbons

- ✔ 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)
- ✔ Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- ✔ Diesel fuel (pref. ISO 1817 Liquid F) (90°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)

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
Density of melt	**1110**	kg/m³	-
Thermal conductivity of melt	**0.19**	W/(m K)	-
Spec. heat capacity of melt	**1700**	J/(kg K)	-
Ejection temperature	**220**	°C	-
Min. mold temperature	**50**	°C	-
Max. mold temperature	**120**	°C	-
Min. melt temperature	**240**	°C	-
Max. melt temperature	**280**	°C	-