

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

**Electrical**

Insulating

**Processing**

Injection molding, Extrusion

**Conformity**

Automotive

**Delivery form**

Pellets, Granules

**Additives**

Unfilled

**Mechanical properties ISO**

Tensile modulus

dry / cond

348000 / -

Unit

psi

Test Standard

ISO 527

Tensile strength

7830 / -

psi

ISO 527

Yield stress

7830 / -

psi

ISO 527

Yield strain

3 / -

%

ISO 527

Stress at 50% strain

4640 / -

psi

ISO 527

Stress at break	<b>5080 / -</b>	psi	ISO 527
Nominal strain at break, tB	<b>&gt;50 / -</b>	%	ISO 527
Tensile creep modulus, 0,5% Strain, 1h	<b>* / 377000</b>	psi	ISO 899-1
Tensile creep modulus, 0,5% Strain, 1000h	<b>* / 218000</b>	psi	ISO 899-1
Charpy impact strength, +23°C	<b>N / -</b>	ftlb/in <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	<b>3.33 / -</b>	ftlb/in <sup>2</sup>	ISO 179/1eA
Type of failure	<b>C / -</b>	-	-
Charpy notched impact strength, -30°C	<b>2.85 / -</b>	ftlb/in <sup>2</sup>	ISO 179/1eA
Type of failure	<b>C / -</b>	-	-
Tensile-impact strength, notched, atN +23°C	<b>52.3 / -</b>	ftlb/in <sup>2</sup>	ISO 8256/1

<b>Thermal properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Melting temperature	<b>433 / *</b>	°F	ISO 11357-1/-3
Glass transition temperature, DSC	<b>113 / *</b>	°F	ISO 11357-1/-2
Temp. of deflection under load A, 1.80 MPa	<b>131 / *</b>	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	<b>302 / *</b>	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	<b>428 / *</b>	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	<b>356 / *</b>	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	<b>6.11E-5 / *</b>	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	<b>6.11E-5 / *</b>	in/in/°F	ISO 11359-1/-2
Melting Temperature	<b>433</b>	°F	ASTM D 3418

<b>Physical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Density	<b>1.31 / -</b>	g/cm <sup>3</sup>	ISO 1183
Water absorption	<b>0.5 / *</b>	%	Sim. to ISO 62
Humidity absorption	<b>0.1 / *</b>	%	Sim. to ISO 62
Moisture content	<b>0.004 / -</b>	wt.-%	ISO 15512
Shore D hardness	<b>77<sup>[b]</sup> / -</b>	-	ISO 7619-1

Ball indentation hardness	<b>21800 / -</b>	psi	ISO 2039-1
Density	<b>1.31</b>	g/cm <sup>3</sup>	ASTM D 792

b: 3 seconds

<b>Burning Behav.</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Burning behav. at 1.5 mm nom. thickn.	<b>HB / *</b>	class	IEC 60695-11-10
Thickness tested	<b>0.0630 / *</b>	in	-
Burning behav. at thickness h	<b>HB / *</b>	class	IEC 60695-11-10
Thickness tested	<b>0.0315 / *</b>	in	-
Oxygen index	<b>23 / *</b>	%	ISO 4589-1/-2
Limiting Oxygen Index	<b>23</b>	%	ASTM D 2863
Glow Wire Flammability Index (GWFI)	<b>1470</b>	°F	IEC 60695-2-12
Glow Wire Ignition Temperature (GWIT)	<b>1470</b>	°F	IEC 60695-2-13

<b>Electrical properties</b>	<b>dry / cond</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>* / 1E14</b>	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	<b>3.3 / -</b>	-	IEC 62631-2-1
Relative permittivity, 1MHz	<b>3.5 / -</b>	-	IEC 62631-2-1
Dissipation factor, 100Hz	<b>20 / -</b>	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	<b>230 / -</b>	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	<b>686 / -</b>	kV/in	IEC 60243-1
CTI, test solution A, 50 drops value	<b>600 / -</b>	-	IEC 60112
Assessment of the insulation group	<b>I</b>	-	DIN EN 60664-1

<b>Optical properties</b>	<b>dry</b>	<b>Unit</b>	<b>Test Standard</b>
Color L	<b>94.6</b>	-	CIE
Color a	<b>-0.52</b>	-	CIE
Color b	<b>2.95</b>	-	CIE

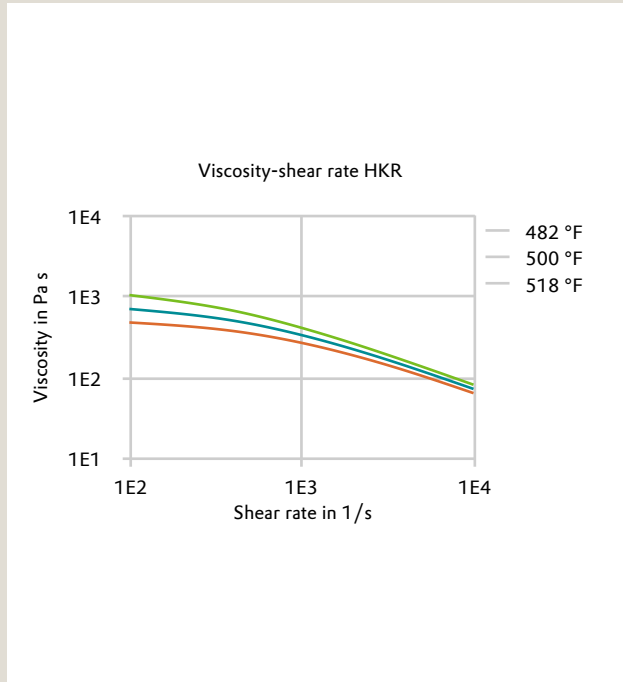
Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	9 / *	cm <sup>3</sup> /10min	ISO 1133
Temperature	250 / *	°C	-
Load	2.16 / *	kg	-
Molding shrinkage, parallel	1.7 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.7 / *	%	ISO 294-4, 2577
Mold temperature	176 / *	°F	-
Melt temperature	500 / *	°F	-

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

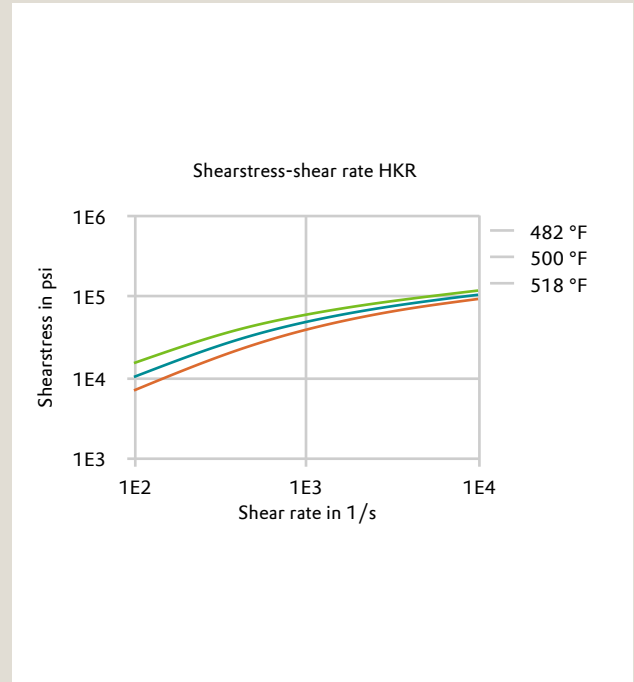
Test specimen production	dry	Unit	Test Standard
Processing conditions acc. ISO	7792	-	ISO ....-2
Injection Molding, melt temperature	500	°F	ISO 294
Injection Molding, mold temperature	176	°F	ISO 294
Injection Molding, injection velocity	7.87	in/s	ISO 294
Injection Molding, pressure at hold	10200	psi	ISO 294

Diagrams

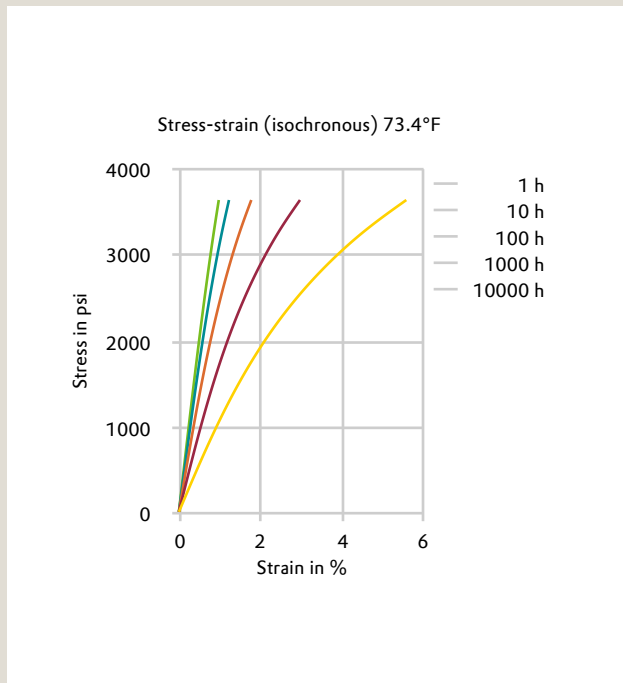
Viscosity-shear rate HKR



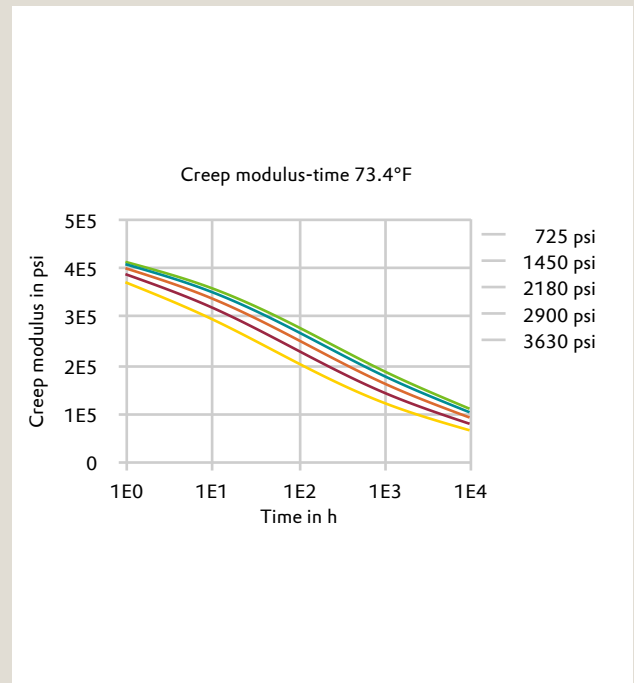
Shearstress-shear rate HKR



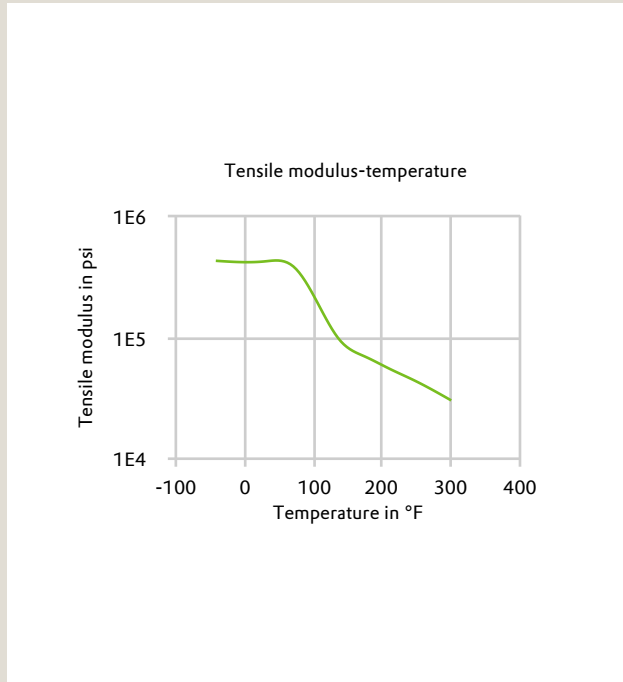
Stress-strain (isochronous) 73°F



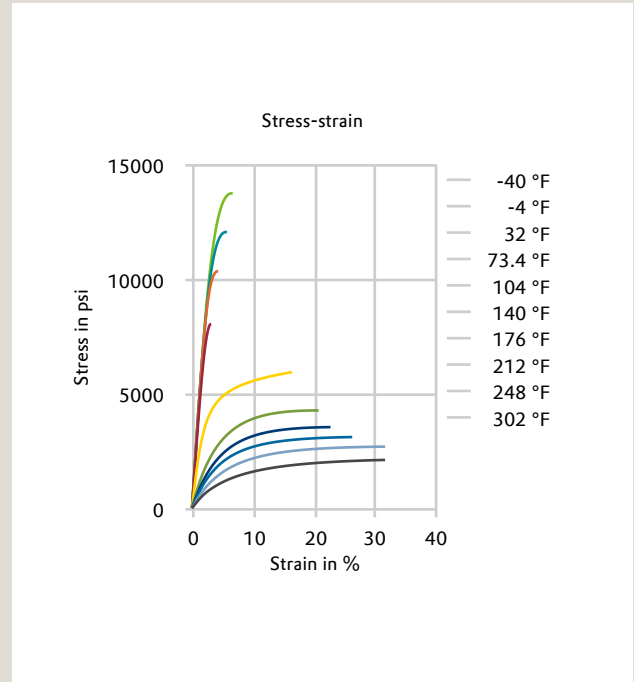
Creep modulus-time 73°F



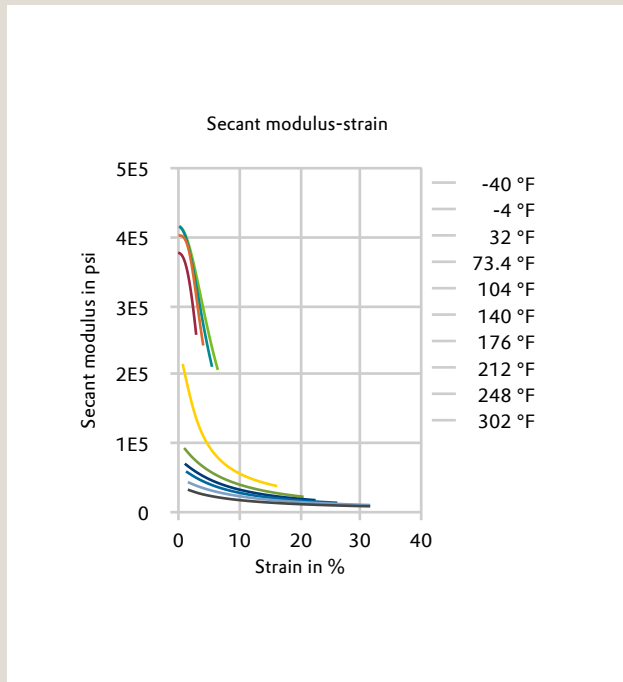
Tensile modulus-temperature



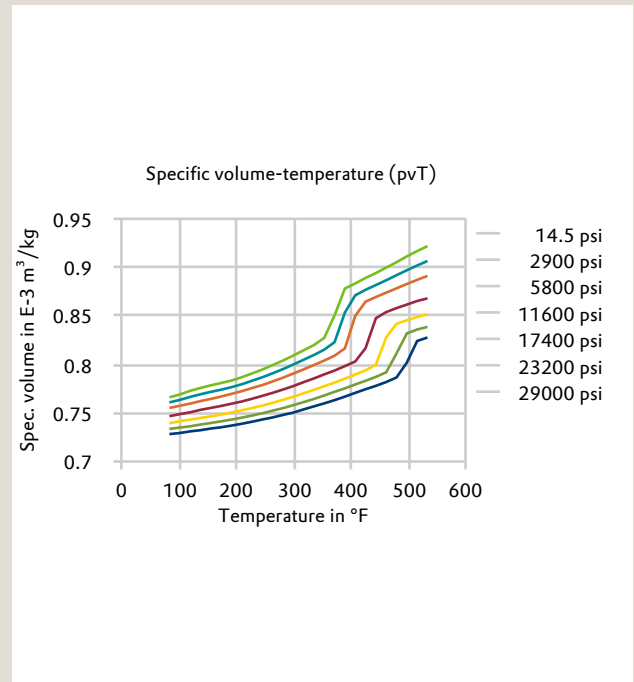
Stress-strain



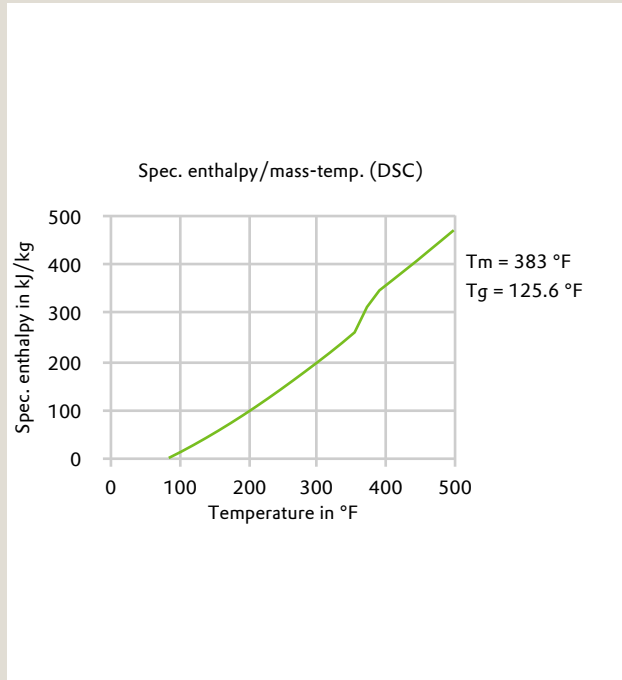
Secant modulus-strain



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	<b>69.3</b>	lb/ft <sup>3</sup>	-
Thermal conductivity of melt	<b>1.32</b>	BTU in/(hr ft <sup>2</sup> °F)-	-
Spec. heat capacity of melt	<b>0.639</b>	BTU/(lb·F)	-
Ejection temperature	<b>428</b>	°F	-
Min. mold temperature	<b>122</b>	°F	-
Max. mold temperature	<b>248</b>	°F	-
Min. melt temperature	<b>464</b>	°F	-
Max. melt temperature	<b>536</b>	°F	-