VESTODUR®

Product Information

VESTODUR® X4159

POLYBUTYLENE TEREPHTHALATE RESIN WITH HIGH FLEXIBILITY AND IMPACT RESISTANCE

VESTODUR® X4159 is a high viscosity semi-crystalline thermoplastic polyester resin based on modified polybutylene terephthalate (PBT). Test bars made of this resin have high flexibility and impact resistance.

VESTODUR® X4159 is supplied as cylindrical pellets in polyethylene packaging.

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

Conformity
Automotive

Processing
Injection molding, Extrusion

Additives
Unfilled

Delivery form
Pellets, Granules

Mechanical properties ISO	dry / cond	Unit	Test Standard
Tensile modulus	**72500 / 84100**	psi	ISO 527
Yield stress	**3920 / -**	psi	ISO 527
Yield strain	**25 / -**	%	ISO 527
Stress at break	*** / 2760**	psi	ISO 527
Nominal strain at break, tB	**>50 / 4**	%	ISO 527

Charpy impact strength, +23°C	**N / 21.4**	ftlb/in²	ISO 179/1eU
Type of failure	**- / C**	-	-
Charpy impact strength, -30°C	**N / 9.99**	ftlb/in²	ISO 179/1eU
Type of failure	**- / C**	-	-
Charpy notched impact strength, +23°C	**14.3 / 1.43**	ftlb/in²	ISO 179/1eA
Type of failure	**C / C**	-	-
Charpy notched impact strength, -30°C	**3.81 / 0.476**	ftlb/in²	ISO 179/1eA
Type of failure	**C / C**	-	-
Flexural modulus, 23°C	**71100 / 85600**	psi	ISO 178
Flexural stress at conv. deflection, 23°C	**2320 / 2900**	psi	ISO 178
Flexural strength, 23°C	**3630 / 4060**	psi	ISO 178
Flexural strain at flexural strength, 23°C	**9 / 6**	%	ISO 178
Flexural stress at break, 23°C	**N / 4060**	psi	ISO 178
Flexural strain at break, 23°C	**N / 6**	%	ISO 178

Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature	**392 / ***	°F	ISO 11357-1/-3
Temp. of deflection under load A, 1.80 MPa	**122 / ***	°F	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	**230 / ***	°F	ISO 75-1/-2
Vicat softening temperature A, 10 N, 50 K/h	**374 / ***	°F	ISO 306
Vicat softening temperature B, 50 N, 50 K/h	**266 / ***	°F	ISO 306
Coeff. of linear therm. expansion, 23°C to 55 °C, parallel	**6.67E-5 / ***	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, 23°C to 55 °C, normal	**6.67E-5 / ***	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, -40°C to +100°C, parallel	**6.67E-5**	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, -40°C to +100°C, normal	**6.67E-5**	in/in/°F	ISO 11359-1/-2
Melting Temperature	**392**	°F	ASTM D 3418

Physical properties	dry / cond	Unit	Test Standard
Density	**1.26 / -**	g/cm³	ISO 1183
Water absorption	**0.4 / ***	%	Sim. to ISO 62
Humidity absorption	**0.3 / ***	%	Sim. to ISO 62
Shore D hardness	**70**[b] **/ -**	-	ISO 7619-1
Density	**1.26**	g/cm³	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	**0.0630 / ***	in	-
Burning behav. at thickness h	**HB / ***	class	IEC 60695-11-10
Thickness tested	**0.0315 / ***	in	-
Oxygen index	**25 / ***	%	ISO 4589-1/-2
Limiting Oxygen Index	**25**	%	ASTM D 2863

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity, V	**1E11 / -**	Ohm*m	IEC 62631-3-1
Surface resistance, RSD	**1E14 / -**	Ohm	IEC 62631-3-2
Relative permittivity, 100Hz	**4 / -**	-	IEC 62631-2-1
Dissipation factor, 100Hz	**350 / -**	E-4	IEC 62631-2-1
CTI, test solution A, 50 drops value	**600 / -**	-	IEC 60112
Assessment of the insulation group	**I**	-	DIN EN 60664-1

Rheological properties	dry / cond	Unit	Test Standard
Melt volume-flow rate, MVR	**10 / ***	cm³/10min	ISO 1133
Temperature	**250 / ***	°C	-
Load	**2.16 / ***	kg	-
Molding shrinkage, parallel	**2.0 / ***	%	ISO 294-4, 2577

Molding shrinkage, normal	**2.0 / ***	%	ISO 294-4, 2577

Characteristics

Applications
Tube and hose

Special Characteristics
High impact strength, High viscosity

Processing
Film extrusion, Profile extrusion

Color
Natural color

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 (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

- ✔ iso-Octane (23°C)

Ketones

- ✖ Acetone (23°C)

Mineral oils

- ✔ SAE 10W40 multigrade motor oil (23°C)
- ✔ Insulating Oil (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)

Other

- ✔ Water (23°C)
- ✖ Deionized water (90°C)

Rheological calculation properties	dry	Unit	Test Standard
Min. mold temperature	**122**	°F	-
Max. mold temperature	**248**	°F	-
Min. melt temperature	**464**	°F	-
Max. melt temperature	**518**	°F	-