Celanese
The chemistry inside innovation™

VANDAR® 4632Z - PBT

Description

Vandar 4632Z is a high impact, 15% glass reinforced polyester alloy. It combines high strength and toughness with a moderate degree of rigidity. It is characterized by excellent solvent resistance, dimensional stability, and moldability.

Physical properties	Value	Unit	Test Standard
Density	**1340**	kg/m³	ISO 1183
Melt volume rate, MVR	**7**	cm³/10min	ISO 1133
MVR temperature	**250**	°C	ISO 1133
MVR load	**5**	kg	ISO 1133
Molding shrinkage, parallel	**0.4 - 0.6**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.2 - 1.4**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**0.45**	%	ISO 62
Humidity absorption, 23°C/50%RH	**0.2**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**4000**	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	**60**	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	**4**	%	ISO 527-2/1A
Flexural modulus, 23°C	**3800**	MPa	ISO 178
Flexural strength, 23°C	**100**	MPa	ISO 178
Charpy impact strength, 23°C	**65**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**62**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**18**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**8**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**17**	kJ/m²	ISO 180/1A
Izod impact notched, -30°C	**7**	kJ/m²	ISO 180/1A
Rockwell hardness (M-Scale)	**109**	M-Scale	ISO 2039-2

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**225**	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	**60**	°C	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	**154**	°C	ISO 75-1, -2
DTUL at 0.45 MPa	**210**	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	**180**	°C	ISO 306
Coeff. of linear therm expansion, parallel	**0.25**	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	**1.41**	E-4/°C	ISO 11359-2
Flammability at thickness h	**HB**	class	UL 94
thickness tested (h)	**1.50**	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	**4.6**	-	IEC 60250
Relative permittivity, 1MHz	**4.1**	-	IEC 60250
Dissipation factor, 100Hz	**70**	E-4	IEC 60250
Dissipation factor, 1MHz	**290**	E-4	IEC 60250
Volume resistivity	**>1E12**	Ohm*m	IEC 60093
Surface resistivity	**>1E14**	Ohm	IEC 60093
Electric strength	**30**	kV/mm	IEC 60243-1
Comparative tracking index	**425**	-	IEC 60112

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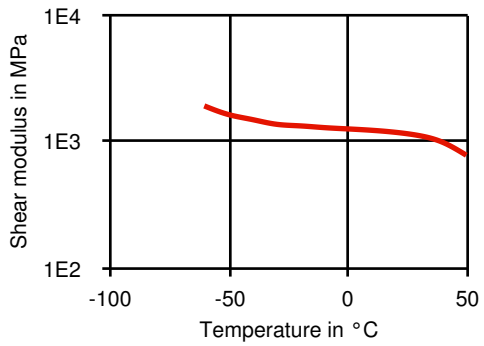
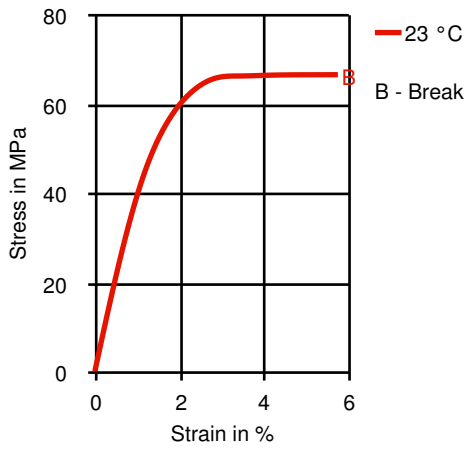
Diagrams

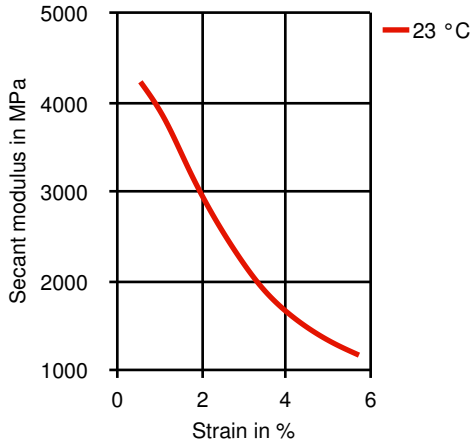
Dynamic Shear modulus-temperature



Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	Value	Unit	Test Standard
Necessary low maximum residual moisture content	**0.02**	%	-
Drying time	**4**	h	-
Drying temperature	**120 - 130**	°C	-
Temperature	**Value**	**Unit**	**Test Standard**
Hopper temperature	**20 - 50**	°C	-
Feeding zone temperature	**230 - 240**	°C	-
Zone1 temperature	**230 - 240**	°C	-
Zone2 temperature	**235 - 250**	°C	-
Zone3 temperature	**235 - 250**	°C	-
Zone4 temperature	**240 - 260**	°C	-
Nozzle temperature	**240 - 260**	°C	-
Melt temperature	**235 - 260**	°C	-
Mold temperature	**65 - 96**	°C	-
Hot runner temperature	**250 - 260**	°C	-
Speed	**Value**	**Unit**	**Test Standard**
Injection speed	**medium-fast**	-	-

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Pre-drying

To avoid hydrolytic degradation during processing, Vandar resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C) at 250°F (121°C) for 4 hours.

Longer pre-drying times/storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

Injection molding

Rear Temperature 450-480(230-250) deg F (deg C)
Center Temperature 460-490(235-255) deg F (deg C)
Front Temperature 470-500(240-260) deg F (deg C)
Nozzle Temperature 470-510(240-265) deg F (deg C)
Melt Temperature 470-510(240-265) deg F (deg C)
Mold Temperature 100-200(40-95 deg F (deg C)
Back Pressure 0-50 psi
Screw Speed Moderate
Injection Speed Fast

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used.

Characteristics

Product Categories	Delivery Form
Glass reinforced, Impact modified	Pellets
Processing	**Additives**
Injection molding	Lubricants