

VANDAR® 4612R - PBT

Description

Vandar 4612R is a high impact polyester alloy containing 7% glass. It possesses excellent impact properties as well as toughness and moldability. Dimensional stability, chemical resistance, and low moisture absorption are other key features.

Physical properties	Value	Unit	Test Standard
Density	1300	kg/m ³	ISO 1183
Melt flow rate, MFR	12	g/10min	ISO 1133
MFR temperature	250	°C	ISO 1133
MFR load	2.16	kg	ISO 1133
Melt volume rate, MVR	8.5	cm ³ /10min	ISO 1133
MVR temperature	250	°C	ISO 1133
MVR load	5	kg	ISO 1133
Molding shrinkage, parallel	0.6 - 0.8	%	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	2800	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	50	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	4	%	ISO 527-2/1A
Tensile nominal strain at break, 50mm/min	6	%	ISO 527-2/1A
Tensile stress at break, 5mm/min	45	MPa	ISO 527-2/1A
Flexural modulus, 23°C	2700	MPa	ISO 178
Flexural strength, 23°C	75	MPa	ISO 178
Charpy impact strength, 23°C	60	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	50	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	14	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	5	kJ/m ²	ISO 179/1eA
Izod impact notched, 23°C	13	kJ/m ²	ISO 180/1A
Rockwell hardness (M-Scale)	111	M-Scale	ISO 2039-2

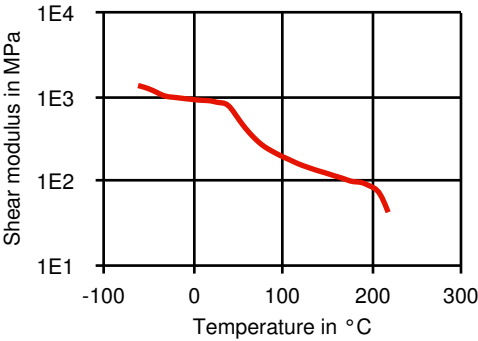
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60	°C	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	92	°C	ISO 75-1, -2
DTUL at 0.45 MPa	200	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	170	°C	ISO 306
Coeff. of linear therm expansion, parallel	0.4	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	1.38	E-4/°C	ISO 11359-2
Flammability at thickness h	HB	class	UL 94
thickness tested (h)	0.85	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	4.3	-	IEC 60250
Relative permittivity, 1MHz	3.8	-	IEC 60250
Dissipation factor, 100Hz	60	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	26	kV/mm	IEC 60243-1
Comparative tracking index	425	-	IEC 60112

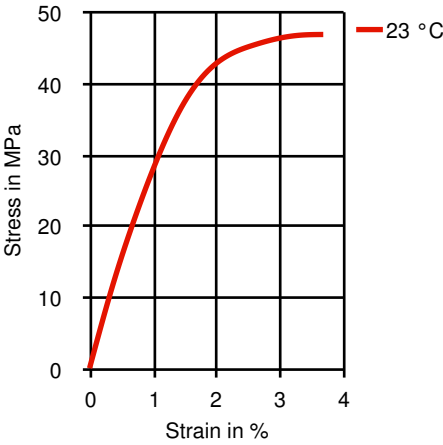


Diagrams

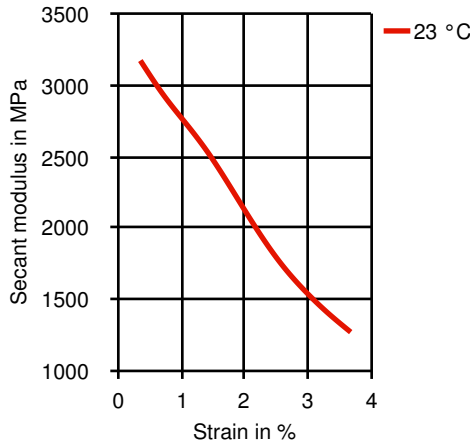
Dynamic Shear modulus-temperature



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

Glass reinforced, Impact modified

Delivery Form

Pellets

Processing

Injection molding

Additives

Lubricants

