

VANDAR® 4612R - PBT
Description

7% glass-fiber

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	81.2	lb/ft ³	ISO 1183
Melt flow rate, MFR	12	g/10min	ISO 1133
MFR temperature	482	°F	ISO 1133
MFR load	4.76	lb	ISO 1133
Melt volume rate, MVR	8.5	cm ³ /10min	ISO 1133
MVR temperature	482	°F	ISO 1133
MVR load	11	lb	ISO 1133
Molding shrinkage, parallel (flow)	0.6 - 0.8	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	1.2 - 1.4	%	ISO 294-4, 2577
Water absorption, 23°C-sat	0.45	%	Sim. to ISO 62
Humidity absorption, 23°C/50%RH	0.2	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	406106	psi	ISO 527-1, -2
Tensile stress at yield, 50mm/min	7250	psi	ISO 527-1, -2
Tensile strain at yield, 50mm/min	4	%	ISO 527-1, -2
Tensile nominal strain at break, 50mm/min	6	%	ISO 527-1, -2
Tensile stress at break, 5mm/min	6530	psi	ISO 527-1, -2
Flexural modulus, 23°C	392000	psi	ISO 178
Flexural strength, 23°C	10900	psi	ISO 178
Charpy impact strength, 23°C	28.5	ft-lb/in ²	ISO 179/1eU
Charpy impact strength, -30°C	23.8	ft-lb/in ²	ISO 179/1eU
Charpy notched impact strength, 23°C	6.66	ft-lb/in ²	ISO 179/1eA
Charpy notched impact strength, -30°C	2.38	ft-lb/in ²	ISO 179/1eA
Izod impact notched, 23°C	6.18	ft-lb/in ²	ISO 180/1A
Rockwell hardness (M-Scale)	111	M-Scale	ISO 2039-2

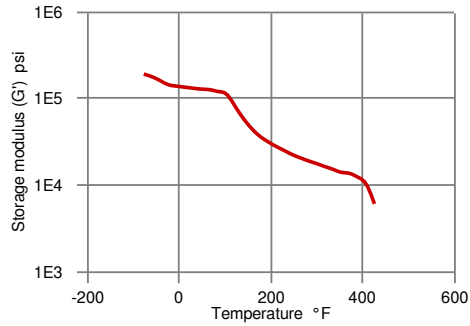
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	140	°F	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	198	°F	ISO 75-1, -2
DTUL at 0.45 MPa	392	°F	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	338	°F	ISO 306
Coeff. of linear therm expansion, parallel	0.222	E-4/°F	ISO 11359-2
Coeff. of linear therm expansion, normal	0.767	E-4/°F	ISO 11359-2
Flammability at thickness h	HB	class	UL 94
thickness tested (h)	0.0335	in	UL 94

Electrical properties	Value	Unit	Test Standard
Dielectric constant (Dk), 100Hz	4.3	-	IEC 60250
Dielectric constant (Dk), 1MHz	3.8	-	IEC 60250
Dissipation factor, 100Hz	60	E-4	IEC 60250
Dissipation factor, 1MHz	290	E-4	IEC 60250
Volume resistivity, 23°C	>1E12	Ohm*m	IEC 62631-3-1
Surface resistivity, 23°C	>1E14	Ohm	IEC 62631-3-2
Electric strength, 23°C (AC)	660	kV/in	IEC 60243-1
Comparative tracking index	PLC 1	-	UL 746

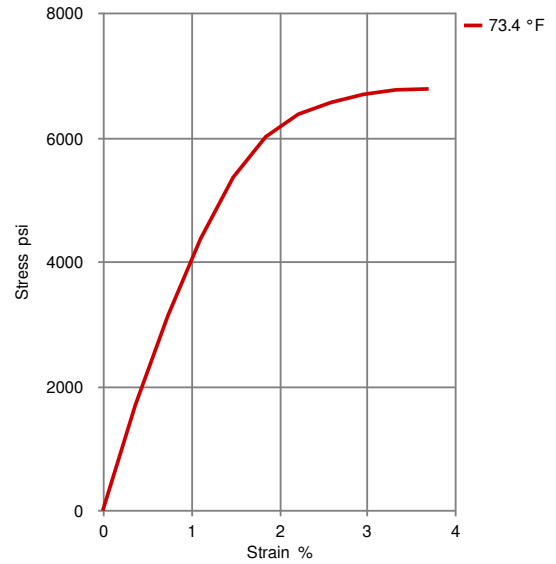
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Diagrams

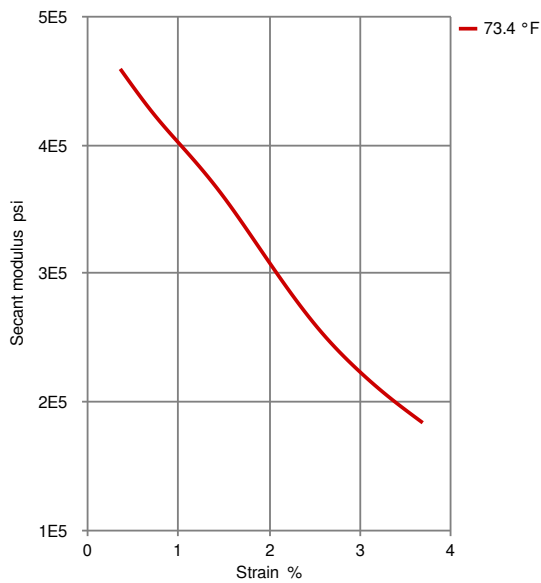
Dynamic Shear modulus-temperature



Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	Value	Unit
Necessary low maximum residual moisture content	0.02	%
Drying time	4	h
Drying temperature	248 - 266	°F

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Temperature	Value	Unit
Hopper temperature	68 - 122	°F
Feeding zone temperature	446 - 464	°F
Zone1 temperature	446 - 464	°F
Zone2 temperature	455 - 482	°F
Zone3 temperature	455 - 482	°F
Zone4 temperature	464 - 500	°F
Nozzle temperature	464 - 500	°F
Melt temperature	455 - 500	°F
Mold temperature	149 - 205	°F
Hot runner temperature	482 - 500	°F

Speed	Value
Injection speed	medium-fast

Other text information

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.

Injection Molding Preprocessing

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 <-30°F (-34°C) at 250°F (121°C) for 4 hours.

Characteristics

Special Characteristics	Auto spec approved
Product Categories	Glass reinforced, Impact modified
Processing	Injection molding
Delivery Form	Pellets
Additives	Lubricants

Other Approvals

OEM	Specification	Additional Information
Stellantis - Chrysler	CPN 2946	Black