

Technical Information



ALTUGLAS™ VML

Overview

OVERVIEW : Standard clear ALTUGLAS™ PMMA resins exhibit key properties that make them the industry standard for applications needing a combination of high transparency and gloss along with UV and scratch resistance.

TRINSEO offers a wide range of grades adapted to injection molding and extrusion processes.

DESCRIPTION :

These clear thermoplastic materials offer :

- Excellent Optical properties - Very high Light Transmittance (92% LT / 0.5% haze)
- Outstanding resistance to mechanical damage and discoloration by ultraviolet rays : years outdoor exposure have no visible effect on ALTUGLAS™ PMMA.
- Very high surface hardness (Rockwell M-Scale) and therefore scratch resistance ensuring a lasting premium look.
- Higher heat resistance than impact-modified grades (Vicat B50 up to 108°C).
- Good stiffness.
- Ease of colouring (PMMA based MB required for non opaque colours to avoid optical defects).

ALTUGLAS™ PMMA VML is a Lubricated version of ALTUGLAS™ PMMA VM, suitable for injection of complex parts with easier demolding.

MARKETS / APPLICATIONS :

Automotive & Transportation
Health, Hygiene & Beauty
Building & Construction
Composites & advanced materials
Consumer Electronics

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.18 g/cm ³	1.18 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (230°C/3.8 kg)	14 g/10 min	14 g/10 min	ISO 1133
Molding Shrinkage - Flow	2.0E-3 to 6.0E-3 in/in	0.20 to 0.60 %	ASTM D955
Water Absorption			ISO 62
Equilibrium, 73°F (23°C), 50% RH	0.30 %	0.30 %	
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Stress (Break, 73°F (23°C))	10000 psi	69.0 MPa	ISO 527-2/5
Tensile Strain (Break, 73°F (23°C))	5.0 %	5.0 %	ISO 527-2/5
Flexural Modulus (73°F (23°C))	450000 psi	3100 MPa	ISO 178
Flexural Stress (73°F (23°C))	14100 psi	97.0 MPa	ISO 178
Compressive Stress (73°F (23°C))	14100 psi	97.0 MPa	ISO 604
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength (73°F (23°C))	0.95 ft-lb/in ²	2.0 kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength			ISO 179/1eU
73°F (23°C)	9.5 ft-lb/in ²	20 kJ/m ²	
Notched Izod Impact Strength (73°F (23°C))	0.86 ft-lb/in ²	1.8 kJ/m ²	ISO 180/1A
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness (M-Scale)	89	89	ASTM D785

Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Annealed ¹	190 °F	87.8 °C	ASTM D648
66 psi (0.45 MPa), Annealed	180 °F	82.0 °C	ISO 75-2/B
264 psi (1.8 MPa), Annealed	171 °F	77.0 °C	ISO 75-2/A
Vicat Softening Temperature	> 190 °F	> 88.0 °C	ISO 306/B50
CLTE - Flow (-22 to 73°F (-30 to 23°C))	3.9E-5 in/in/°F	7.0E-5 cm/cm/°C	ASTM D696
Specific Heat	0.500 Btu/lb/°F	2090 J/kg/°C	
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating	HB	HB	UL 94
Optical	Nominal Value (English)	Nominal Value (SI)	Test Method
Refractive Index ²	1.490	1.490	ISO 489
Light Transmittance	92.0 %	92.0 %	ASTM D1003
Haze	0.500 %	0.500 %	ASTM D1003
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	176 °F	80 °C	
Drying Time	4.0 to 6.0 hr	4.0 to 6.0 hr	
Rear Temperature	374 to 410 °F	190 to 210 °C	
Middle Temperature	392 to 428 °F	200 to 220 °C	
Front Temperature	428 to 464 °F	220 to 240 °C	
Nozzle Temperature	428 to 464 °F	220 to 240 °C	
Processing (Melt) Temp	428 to 464 °F	220 to 240 °C	
Mold Temperature	122 to 140 °F	50 to 60 °C	

Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

¹ Annealing Cycle: 16 hours @ 90°C (194°F)

² Method B

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