Plexiglas® VS

Polymethyl Methacrylate Acrylic

Altuglas International of Arkema Inc.

Message:

Plexiglas® VS is a thermoplastic acrylic resin formulated for injection molding applications. It is characterized by its very high melt flow. Plexiglas® VS has excellent weatherability and optical properties allowing it to excel in applications requiring outdoor stability, high quality surface appearance and/or precision optics. Plexiglas® VS is easy to process due to its exceptional thermal stability, extrusion melt strength, and excellent tool surface reproduction and release properties. Supplemental moldflow simulation data is available. It has excellent resistance to many chemicals including solutions of inorganic acids, alkalis and aliphatic hydrocarbons such as VM&P naphtha and heptane. Additionally, it is virtually unaffected by a wide range of commercial products including many beverages, foodstuffs, detergent solutions and cleaners.

General Information				
UL YellowCard	E39437-231445	E39437-231446		
Features	BPA Free			
	Good Dimensional Stability			
	Good Thermal Stability			
	Good UV Resistance			
	Good Weather Resistance			
	High Clarity			
	High Flow			
	High Scratch Resistance			
	Low Shrinkage			
Uses	Bathroom Accessories			
	Household Goods			
Agency Ratings	FDA 21 CFR 177.1010			
RoHS Compliance	RoHS Compliant			
Appearance	Clear/Transparent			
	Colors Available			
	Opaque			
	Translucent			
Forms	Pellets			
Processing Method	Injection Molding			
Physical	Nominal Value	Unit	Test Method	
Specific Gravity	1.18	g/cm³	ASTM D792	
Melt Mass-Flow Rate (MFR) (230°C/3.8 kg)	27	g/10 min	ASTM D1238	
Molding Shrinkage - Flow	0.20 to 0.60	%	ASTM D955	
Water Absorption (24 hr)	0.30	%	ASTM D570	
Hardness	Nominal Value	Unit	Test Method	
Rockwell Hardness (M-Scale)	84		ASTM D785	

Tensile Modulus2400MPaASTM D538Tensile Stargth (Yild)6.8MPaASTM 0780Tensile Expation (Break)3.00%ASTM 0780Hexand Modulus2460MPaASTM 0780Flexand Modulus965.5MPaASTM 0780Flexand Modulus965.5MPaASTM 0780Nonchel Loof (mpact (23°C)16 andJ/mASTM 0780TermardNominal ValueUnitTead MethodD65 (MPa, Annealed80.6C	Mechanical	Nominal Value	Unit	Test Method
Tanalle Elongation (Break)3.0%ASTM D638Fleural Modulus2960MPaASTM D790Fleural Modulus965MPaASTM D790ImpactNominal ValueUnitTest MethodNotched Isol Impact (23.5°)16J/mASTM D256TamalNominal ValueUnitTest MethodDeflection Temperature Under Load76.1CSTM D56818 MPa, Annealed60.6°CSTM D525-67.1°CASTM D1255-81.1°CASTM D1255-81.1°CASTM D1255-81.1°CASTM D1255-81.1°CASTM D1255-81.1°CASTM D1255-81.1°CASTM D1255-18.1°CASTM D1255-19.4°CASTM D1255-19.4°CASTM D1255-19.4°CASTM D1255-19.4°CSTM D1255-19.4°CSTM D1255-19.4°CSTM D1255-19.4Nominal ValueVinyASTM D125STM D125STM D125-19.4STM D125STM D125-19.4STM D125STM D125-19.4STM D125STM D125-19.4STM D125STM D125-19.4STM D125STM D125-19.4STM D125STM D125<	Tensile Modulus	2900	МРа	ASTM D638
Rexural Modulus2880MPaASTM D780Flexural Strongth65.5MPaASTM D780ImpactNominal ValueUnitTest MethodNochnel Joad Impact (23°C)Nominal ValueUnitTest MethodDeflection Temperature Under Load 1-ASTM D5860.45 MPa, Annealed60.5°C-0.45 MPa, Annealed80.5°C-1.8 MPa, Annealed87.2°CASTM D1525 ⁷	Tensile Strength (Yield)	64.8	МРа	ASTM D638
Rexural Modulus2880MPaASTM D780Flexural Strongth65.5MPaASTM D780ImpactNominal ValueUnitTest MethodNochnel Joad Impact (23°C)Nominal ValueUnitTest MethodDeflection Temperature Under Load 1-ASTM D5860.45 MPa, Annealed60.5°C-0.45 MPa, Annealed80.5°C-1.8 MPa, Annealed87.2°CASTM D1525 ⁷	Tensile Elongation (Break)	3.0	%	ASTM D638
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Hame AaringHBUl 94OpticalNominal ValueUnitTest MethodRefractive Index 41.490Transmittance (3180 µm)92.0%.Haze (3180 µm)<1.0	Thermal Conductivity	0.19	W/m/K	ASTM C177
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Transmittance (180 µm)92.0%ASTM D1003Haze (3180 µm)<1.0	Optical	Nominal Value	Unit	Test Method
Haze (3180 μm)<10%ASTM D1003Additional InformationNominal ValueTest MethodASTM ClassificationPMMA 0111V7ASTM D788InjectionNominal ValueUnitDrying Temperature65.6 to 76.7"CDrying Time4.0hrSuggested Max Moisture0.10%Suggested Shot Size50%Suggested Max Regrind20%Suggested Max Regrind182"CMiddle Temperature188"CNozie Temperature193"CNozie Temperature188"CNozie Temperature88.9 to 65.6"CNodel Temperature6.689"CNozie Temperature6.689"CNozie Temperature0.689MPaSterw Speed50 to 100rpmSterw Spread50.10 to 20.01.0Sterw Compression Ratio50.10 to 25.10	Refractive Index ⁴	1.490		ASTM D542
Additional InformationNominal ValueTest MethodASTM ClassificationPMMA 0111V7ASTM D788InjectionNominal ValueUnitDrying Temperature656 to 76.7°CDrying Time4.0hrSuggested Max Moisture0.10%Suggested Max Moisture50%Suggested Max Regrind20%Suggested Max Regrind182°CMiddle Temperature188°CFront Temperature193°CNozzle Temperature188°CNozzle Temperature849 to 65.6°CNod Temperature6.689MPaSterw Speed50 to 100rpmStrew Speed50 to 100.rpmSterw Compression Ratio50.01 to 20.51.0	Transmittance (3180 μm)	92.0	%	ASTM D1003
ASTM Classification PMMA 0111V7 ASTM D788 Injection Nominal Value Unit Drying Temperature 65.6 to 76.7 °C Drying Time 4.0 hr Suggested Max Moisture 0.10 % Suggested Max Moisture 0.10 % Suggested Shot Size 50 % Suggested Max Regrind 20 % Middle Temperature 188 °C Middle Temperature 193 °C Nozzle Temperature 188 °C Nozzle Temperature 48.9 to 65.6 °C Mold Temperature 88.9 to 65.6 °C Mold Temperature 48.9 to 65.6 °C Mold Temperature 48.9 to 65.6 °C Mold Temperature 6.69 MPa Screw Speed 50 to 100 rpm Screw Speed 50.0 to 20.01.0 screw Compression Ratio	Haze (3180 µm)	< 1.0	%	ASTM D1003
InjectionNominal ValueUnitDrying Temperature65.6 to 76.7°CDrying Time4.0hrSuggested Max Moisture0.10%Suggested Max Moisture50%Suggested Shot Size20%Suggested Max Regrind182°CMiddle Temperature188°CFront Temperature193°CNozzle Temperature88°CNozzle Temperature48.9 to 65.6°CMiddle Temperature6.640°CSuggested Max Regrind6.650°CStrew LyD Ratio6.690MPaScrew LyD Ratio5.01.10 to 20.1.0rpm	Additional Information	Nominal Value		Test Method
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Suggested Shot Size50%Suggested Max Regrind20%Rear Temperature182°CMiddle Temperature188°CFront Temperature193°CNozzle Temperature188°CNozzle Temperature188°CNozzle Temperature188°CNozzle Temperature188°CNozzle Temperature188°CNozzle Temperature188°CNozzle Temperature68.9°CNold Temperature48.9 to 65.6°CInjection Rate689MPaScrew Speed50 to 100rpmScrew L/D Ratio15.0:1.0 to 20.0:1.0rpmScrew Compression Ratio2.0:1.0 to 2.5:1.0	Drying Time	4.0	hr	
Suggested Max Regrind20%Rear Temperature182°CMiddle Temperature188°CFront Temperature193°CNozzle Temperature188°CNozzle Temperature188°CProcessing (Melt) Temp<271	Suggested Max Moisture	0.10	%	
Rear Temperature182°CMiddle Temperature188°CFront Temperature193°CNozzle Temperature188°CProcessing (Melt) Temp<271	Suggested Shot Size	50	%	
Middle Temperature188CFront Temperature193CNozzle Temperature188CProcessing (Melt) Temp<271	Suggested Max Regrind	20	%	
Front Temperature193°CNozzle Temperature188°CProcessing (Melt) Temp< 271	Rear Temperature	182	°C	
Nozzle Temperature188°CProcessing (Melt) Temp< 271	Middle Temperature	188	°C	
Processing (Melt) Temp< 271°CMold Temperature48.9 to 65.6°CInjection RateFastBack Pressure0.689MPaScrew Speed50 to 100rpmScrew L/D Ratio15.0:1.0 to 20.0:1.0Screw Compression Ratio20:1.0 to 2.5:1.0	Front Temperature	193	°C	
Mold Temperature48.9 to 65.6°CInjection RateFastBack Pressure0.689MPaScrew Speed50 to 100rpmScrew L/D Ratio15.0:1.0 to 20.0:1.0Screw Compression Ratio2.0:1.0 to 2.5:1.0	Nozzle Temperature	188	°C	
Injection RateFastBack Pressure0.689MPaScrew Speed50 to 100rpmScrew L/D Ratio15.0:1.0 to 20.0:1.0Screw Compression Ratio	Processing (Melt) Temp	< 271	°C	
Back Pressure0.689MPaScrew Speed50 to 100rpmScrew L/D Ratio15.0:1.0 to 20.0:1.0-Screw Compression Ratio2.0:1.0 to 2.5:1.0-	Mold Temperature	48.9 to 65.6	°C	
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Screw L/D Ratio 15.0:1.0 to 20.0:1.0 Screw Compression Ratio 2.0:1.0 to 2.5:1.0	Back Pressure	0.689	МРа	
Screw Compression Ratio 2.0:1.0 to 2.5:1.0	Screw Speed	50 to 100	rpm	
	Screw L/D Ratio	15.0:1.0 to 20.0:1.0		
Vent Depth 0.051 mm	Screw Compression Ratio	2.0:1.0 to 2.5:1.0		
	Vent Depth	0.051	mm	

NOTE	
1.	Annealing cycle: 4hrs @ 158°F
2.	Rate A (50°C/h), Loading 1 (10 N)
3.	Rate A (50°C/h), Loading 2 (50 N)
4.	ND @ 72°F

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