Makrolon® TC110 FR

Covestro - Polycarbonates - *Polycarbonate*

General Information

Product Description			
moderate thermal conductivity; MVR (300 °C/1.2 kg) 5.0 cm³/10 min; high viscosity; flame retardant			
General			
Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Additive	• Flame Retardant		
Features	• Flame Retardant	• High Viscosity	• Thermally Conductive
ISO Designation	• PC-(TD25+MD5) FR		

Properties [1]

Physical	Nominal Value	Unit	Test Method
Density (73°F)	1.45	g/cm³	ISO 1183
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	5.0	cm³/10min	ISO 1133
Molding Shrinkage - Across Flow (0.0787 in)	0.30 to 0.40	%	ISO 294-4
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus (73°F)	870000	psi	ISO 527-1/1
Tensile Stress (Yield, 73°F)	7540	psi	ISO 527-2/5
Tensile Strain (Yield, 73°F)	3.0	%	ISO 527-2/5
Tensile Strain (Break, 73°F)	52	%	ISO 527-2/5
Nominal Tensile Strain at Break (73°F)	4.3	%	ISO 527-2/5
Flexural Modulus [2] (73°F)	870000	psi	ISO 178
Flexural Stress [2]			ISO 178
73°F	14100	psi	
3.5% Strain, 73°F	13800	psi	
Flexural Strain at Flexural Strength [3] (73°F)	4.0	%	ISO 178
Impact	**Nominal Value**	**Unit**	**Test Method**
Charpy Unnotched Impact Strength (73°F, Complete Break)	43	ft·lb/in²	ISO 179/1eU
Multi-Axial Instrumented Impact Energy (73°F)	7.38	ft·lb	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force (73°F)	719	lbf	ISO 6603-2
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load (66 psi, Unannealed)	289	°F	ISO 75-2/B
Deflection Temperature Under Load (264 psi, Unannealed)	270	°F	ISO 75-2/A
Vicat Softening Temperature	293	°F	ISO 306/B50
CLTE - Flow (73 to 131°F)	2.0E-5	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F)	3.0E-5	in/in/°F	ISO 11359-2
Thermal Conductivity			ISO 8302
73°F [4]	1.4	Btu·in/hr/ft²/°F	
73°F [5]	5.6	Btu·in/hr/ft²/°F	
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	> 1.0E+15	ohms	IEC 60093
Volume Resistivity (73°F)	> 1.0E+17	ohms·cm	IEC 60093
Electric Strength (73°F, 0.0394 in)	990	V/mil	IEC 60243-1
Comparative Tracking Index (Solution A)	275	V	IEC 60112
Flammability	**Nominal Value**	**Unit**	**Test Method**
Flame Rating (0.06 in)	V-0		UL 94

Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity [6] (572°F)	160	Pa·s	ISO 11443-A

Processing Information

Injection	Nominal Value	Unit
Drying Temperature - Dry Air Dryer	248	°F
Drying Time - Dry Air Dryer	4.0	hr

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] 0.079 in/min

[3] 2.0 mm/min

[4] Across Flow

[5] Parallel

[6] 1000s-1