CYCOLOY™ FR RESINS C3650

REGION AMERICAS

DESCRIPTION

CYCOLOY C3650 Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS) resin is a grade that can be injection molded or extruded into sheet for secondary thermoforming operations. This non-chlorinated, non-brominated flame retardant PC/ABS has a UL V0 & 5VB flame rating. CYCOLOY C3650 resin is a general purpose resin that is an excellent candidate for a wide variety of applications including cable channels and is verified non-halogen by the DIN VDE 0472/815 standard.

TYPICAL PROPERTY VALUES

Revision 20191022

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	64	MPa	ASTM D638
Tensile Stress, brk, Type I, 50 mm/min	51	MPa	ASTM D638
Tensile Strain, yld, Type I, 50 mm/min	4.9	%	ASTM D638
Tensile Strain, brk, Type I, 50 mm/min	35	%	ASTM D638
Tensile Modulus, 50 mm/min	2860	MPa	ASTM D638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	101	MPa	ASTM D790
Flexural Modulus, 1.3 mm/min, 50 mm span	2680	MPa	ASTM D790
Tensile Stress, yield, 5 mm/min	55	MPa	ISO 527
Tensile Stress, break, 5 mm/min	50	MPa	ISO 527
Tensile Stress, yield, 50 mm/min	65	MPa	ISO 527
Tensile Stress, break, 50 mm/min	55	MPa	ISO 527
Tensile Strain, yield, 5 mm/min	3	%	ISO 527
Tensile Strain, break, 5 mm/min	55	%	ISO 527
Tensile Strain, yield, 50 mm/min	4.5	%	ISO 527
Tensile Strain, break, 50 mm/min	>50	%	ISO 527
Tensile Modulus, 1 mm/min	2600	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	100	MPa	ISO 178
Flexural Modulus, 2 mm/min	2700	MPa	ISO 178
Ball Indentation Hardness, H358/30	113	MPa	ISO 2039-1
Hardness, Rockwell R	124	-	ISO 2039-2
IMPACT			
Izod Impact, notched, 23°C	694	J/m	ASTM D256
Instrumented Dart Impact Total Energy, 23°C	64	J	ASTM D3763
Izod Impact, notched 80*10*4 +23°C	45	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 0°C	15	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	13	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm	48	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*4 sp=62mm	13	kJ/m²	ISO 179/1eA
THERMAL			
Vicat Softening Temp, Rate B/50	110	°C	ASTM D1525
HDT, 0.45 MPa, 3.2 mm, unannealed	100	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	88	°C	ASTM D648
CTE, -40°C to 40°C, flow	7.2E-05	1/°C	ASTM E831

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
CTE, -40°C to 40°C, xflow	7.2E-05	1/°C	ASTM E831
Thermal Conductivity	0.2	W/m-°C	ISO 8302
CTE, 23°C to 60°C, flow	8.E-05	1/°C	ISO 11359-2
CTE, 23°C to 60°C, xflow	8.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate B/50	108	°C	ISO 306
Vicat Softening Temp, Rate B/120	110	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	102	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	91	°C	ISO 75/Ae
Relative Temp Index, Elec	60	°C	UL 746B
Relative Temp Index, Mech w/impact	60	°C	UL 746B
Relative Temp Index, Mech w/o impact	60	°C	UL 746B
PHYSICAL			
Specific Gravity	1.2	-	ASTM D792
Water Absorption, (23°C/ saturated)	0.6	%	ASTM D570
Mold Shrinkage, flow, 3.2 mm	0.4 – 0.6	%	SABIC method
Melt Flow Rate, 260°C/5.0 kgf	8.5	g/10 min	ASTM D1238
Density	1.18	g/cm³	ISO 1183
Melt Volume Rate, MVR at 260°C/5.0 kg	8	cm³/10 min	ISO 1133
ELECTRICAL			
Dissipation Factor, 50/60 Hz	0.006	-	ASTM D150
Volume Resistivity	>1.E+15	Ω.cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ω	IEC 60093
Dielectric Strength, in oil, 0.8 mm	35	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 1.6 mm	25	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	17	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.7	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.004	-	IEC 60250
Dissipation Factor, 1 MHz	0.006	-	IEC 60250
Comparative Tracking Index	600	V	IEC 60112
Relative Permittivity, 50/60 Hz	2.8	-	IEC 60250
FLAME CHARACTERISTICS			
UL Yellow Card Link	E121562-221036	-	-
UL Recognized, 94V-0 Flame Class Rating	1.5	mm	UL 94
UL Recognized, 94-5VB Flame Class Rating	2.5	mm	UL 94
Oxygen Index (LOI)	37	%	ISO 4589
INJECTION MOLDING			
Drying Temperature	80 – 90	°C	
Drying Time	3 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0.04	%	
Melt Temperature	245 – 275	°C	
Nozzle Temperature	245 – 275	°C	
Front - Zone 3 Temperature	245 – 275	°C	
Middle - Zone 2 Temperature	220 – 265	°C	
Rear - Zone 1 Temperature	220 – 255	°C	

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Mold Temperature	60 – 80	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	
Shot to Cylinder Size	30 – 80	%	
Vent Depth	0.038 – 0.076	mm	
EXTRUSION BLOW MOLDING			
Drying Temperature	80 – 90	°C	
Drying Time	2 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Maximum Moisture Content	0 – 0.02	%	
Melt Temperature (Parison)	225 – 250	°C	
Barrel - Zone 1 Temperature	205 – 230	°C	
Barrel - Zone 2 Temperature	215 – 245	°C	
Barrel - Zone 3 Temperature	215 – 245	°C	
Barrel - Zone 4 Temperature	220 – 250	°C	
Adapter - Zone 5 Temperature	225 – 250	°C	
Head - Zone 6 - Top Temperature	225 – 250	°C	
Head - Zone 7 - Bottom Temperature	225 – 250	°C	
Mold Temperature	65 – 90	°C	
Die Temperature	240 – 250	°C	
PROFILE EXTRUSION			
Drying Temperature	80 – 90	°C	
Drying Time	2 – 4	Hrs	
Drying Time (Cumulative)	8	Hrs	
Minimum Moisture Content	0 – 0.02	%	
Melt Temperature	225 – 270	°C	
Barrel - Zone 1 Temperature	205 – 250	°C	
Barrel - Zone 2 Temperature	215 – 260	°C	
Barrel - Zone 3 Temperature	215 – 260	°C	
Barrel - Zone 4 Temperature	225 – 270	°C	
Adapter Temperature	225 – 270	°C	
Die Temperature	225 – 270	°C	
Calibrator Temperature	60 – 80	°C	

DISCLAIMER