

CYCOLAC™ X11 resin

Acrylonitrile Butadiene Styrene

SABIC Innovative Plastics

Message:

Automotive: High heat resistance. Excellent flow/impact balance. UL94 HB rated. High gloss. NH designation indicates typically improved flow over legacy X11.

General Information	
UL YellowCard	E121562-220746
Features	High Gloss
	High Heat Resistance
Uses	Automotive Applications
Processing Method	Injection Molding
Multi-Point Data	Coefficient of Thermal Expansion vs. Temperature (ASTM E831)
	Elastic Modulus vs Temperature (ASTM D4065)
	Flexural DMA (ASTM D4065)
	Pressure-Volume-Temperature (PVT - Zoller Method)
	Shear DMA (ASTM D4065)
	Specific Heat vs. Temperature (ASTM D3417)
	Tensile Fatigue
	Tensile Stress vs. Strain (ASTM D638)
	Thermal Conductivity vs. Temperature (ASTM E1530)
	Viscosity vs. Shear Rate (ASTM D3835)

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.04	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR)			
230°C/3.8 kg	3.5	g/10 min	ASTM D1238
260°C/5.0 kg	18	g/10 min	ASTM D1238
220°C/10.0 kg	10	g/10 min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.80	%	Internal Method
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness (R-Scale)	104		ASTM D785
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
-- ¹	2380	MPa	ASTM D638
--	2350	MPa	ISO 527-2/1
Tensile Strength			
Yield ²	42.0	MPa	ASTM D638

Yield	46.0	MPa	ISO 527-2/50
Break ³	33.0	MPa	ASTM D638
Break	35.0	MPa	ISO 527-2/50
Tensile Elongation			
Yield ⁴	2.6	%	ASTM D638
Yield	2.6	%	ISO 527-2/50
Break ⁵	27	%	ASTM D638
Break	18	%	ISO 527-2/50
Flexural Modulus			
50.0 mm Span ⁶	2300	MPa	ASTM D790
-- ⁷	2170	MPa	ISO 178
Flexural Stress			
--	69.0	MPa	ISO 178
Yield, 50.0 mm Span ⁸	71.0	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁹			ISO 179/1eA
-30°C	11	kJ/m ²	
23°C	25	kJ/m ²	
Notched Izod Impact			
23°C	300	J/m	ASTM D256
23°C, 6.40 mm	240	J/m	ASTM D256
-40°C ¹⁰	9.0	kJ/m ²	ISO 180/1A
-30°C ¹¹	10	kJ/m ²	ISO 180/1A
23°C ¹²	25	kJ/m ²	ISO 180/1A
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, Unannealed, 3.20 mm	99.0	°C	ASTM D648
0.45 MPa, Unannealed, 64.0 mm Span ¹³	99.0	°C	ISO 75-2/Bf
1.8 MPa, Unannealed, 3.20 mm	86.0	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	93.0	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ¹⁴	85.0	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	104	°C	ISO 306/B50
--	106	°C	ISO 306/B120
RTI Elec	60.0	°C	UL 746
RTI Imp	60.0	°C	UL 746
RTI Str	60.0	°C	UL 746
Flammability	Nominal Value	Test Method	
Flame Rating (1.50 mm)	HB	UL 94	
Injection	Nominal Value	Unit	
Drying Temperature	87.8 to 93.3	°C	
Drying Time	2.0 to 4.0	hr	

Drying Time, Maximum	8.0	hr
Suggested Max Moisture	0.010	%
Suggested Shot Size	50 to 70	%
Rear Temperature	193 to 210	°C
Middle Temperature	210 to 227	°C
Front Temperature	232 to 254	°C
Nozzle Temperature	232 to 274	°C
Processing (Melt) Temp	232 to 274	°C
Mold Temperature	48.9 to 82.2	°C
Back Pressure	0.345 to 0.689	MPa
Screw Speed	30 to 60	rpm
Vent Depth	0.038 to 0.051	mm

NOTE

1. 5.0 mm/min
2. Type I, 5.0 mm/min
3. Type I, 5.0 mm/min
4. Type I, 5.0 mm/min
5. Type I, 5.0 mm/min
6. 1.3 mm/min
7. 2.0 mm/min
8. 1.3 mm/min
9. 80*10*4 sp=62mm
10. 80*10*4
11. 80*10*4
12. 80*10*4
13. 80*10*4 mm
14. 80*10*4 mm

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