

CYCOLAC™ FR23 resin

Acrylonitrile Butadiene Styrene

SABIC Innovative Plastics

Message:

Flame retardant ABS (non-PBBE additives). Good properties/toughness. Excellent moldability. UL94 V-0 rated.

General Information			
UL YellowCard	E121562-220687		
Additive	Flame Retardant		
Features	Flame Retardant		
	Good Moldability		
	Good Toughness		
Processing Method	Injection Molding		
Multi-Point Data	Coefficient of Thermal Expansion vs. Temperature (ASTM E831)		
	Flexural DMA (ASTM D4065)		
	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	1.17	g/cm ³	ASTM D792
Melt Mass-Flow Rate (MFR)			
230°C/3.8 kg	6.8	g/10 min	ASTM D1238
220°C/5.0 kg	9.8	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (220°C/10.0 kg)	37.0	cm ³ /10min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.70	%	Internal Method
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ¹	2410	MPa	ASTM D638
Tensile Strength ²			ASTM D638
Yield	42.7	MPa	
Break	35.2	MPa	
Tensile Elongation ³			ASTM D638
Yield	2.1	%	
Break	11	%	
Flexural Modulus ⁴ (50.0 mm Span)	2720	MPa	ASTM D790

Flexural Strength ⁵ (Yield, 50.0 mm Span)	73.1	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact (23°C)	270	J/m	ASTM D256
Instrumented Dart Impact (23°C, Total Energy)	41.8	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed, 3.20 mm	83.9	°C	
1.8 MPa, Unannealed, 3.20 mm	72.2	°C	
Vicat Softening Temperature	90.0	°C	ASTM D1525 ⁶
CLTE			ASTM E831
Flow : -40 to 40°C	7.9E-5	cm/cm/°C	
Transverse : -40 to 40°C	7.9E-5	cm/cm/°C	
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			UL 94
2.31 mm	V-0		
2.49 mm	5VB		
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (200°C, 1000 sec ⁻¹)	310	Pa · s	ASTM D3835
Injection	Nominal Value	Unit	
Drying Temperature	82.2 to 87.8	°C	
Drying Time	2.0 to 4.0	hr	
Drying Time, Maximum	6.0	hr	
Suggested Max Moisture	0.10	%	
Suggested Shot Size	50 to 70	%	
Rear Temperature	171 to 182	°C	
Middle Temperature	193 to 204	°C	
Front Temperature	199 to 216	°C	
Nozzle Temperature	199 to 221	°C	
Processing (Melt) Temp	199 to 221	°C	
Mold Temperature	48.9 to 71.1	°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.	1.3 mm/min		

5.	1.3 mm/min
6.	Rate B (120°C/h), Loading 2 (50 N)

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