

CYCOLAC™ FR15 resin

Acrylonitrile Butadiene Styrene

SABIC Innovative Plastics

Message:

Flame retardant ABS (non-PBBE additive). Good property/toughness. Excellent moldability. UL94 V-0/5VA rated.

General Information			
UL YellowCard	E121562-220686		
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			
--	1.20	g/cm ³	ASTM D792
--	1.19	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			
230°C/3.8 kg	4.0	g/10 min	ASTM D1238
220°C/5.0 kg	10	g/10 min	ISO 1133
Molding Shrinkage - Flow (3.20 mm)	0.50 to 0.70	%	Internal Method
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus ¹	2340	MPa	ASTM D638
Tensile Strength			
Yield ²	41.4	MPa	ASTM D638
Yield	41.3	MPa	ISO 527-2/50
Break ³	35.2	MPa	ASTM D638
Break	31.3	MPa	ISO 527-2/50
Tensile Elongation			
Yield ⁴	2.3	%	ASTM D638

Yield	2.1	%	ISO 527-2/50
Break ⁵	9.0	%	ASTM D638
Break	34	%	ISO 527-2/50
Flexural Modulus ⁶ (50.0 mm Span)	2720	MPa	ASTM D790
Flexural Strength ⁷ (Yield, 50.0 mm Span)	71.7	MPa	ASTM D790
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength ⁸ (23°C)	20	kJ/m ²	ISO 179/1eA
Notched Izod Impact			
23°C	210	J/m	ASTM D256
-30°C ⁹	6.5	kJ/m ²	ISO 180/1A
23°C ¹⁰	19	kJ/m ²	ISO 180/1A
Instrumented Dart Impact (23°C, Total Energy)	33.9	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, Unannealed, 3.20 mm	82.2	°C	ASTM D648
1.8 MPa, Unannealed, 3.20 mm	70.0	°C	ASTM D648
1.8 MPa, Unannealed, 64.0 mm Span ¹¹	73.4	°C	ISO 75-2/Af
Vicat Softening Temperature			
--	86.1	°C	ASTM D1525 ¹²
--	81.2	°C	ISO 306/B50
--	84.1	°C	ISO 306/B120
CLTE			ASTM E831
Flow : -40 to 40°C	8.5E-5	cm/cm/°C	
Transverse : -40 to 40°C	8.6E-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
Electrical	Nominal Value		Test Method
Arc Resistance ¹³	PLC 7		ASTM D495
Comparative Tracking Index (CTI)	PLC 2		UL 746
High Amp Arc Ignition (HAI)	PLC 4		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 4		UL 746
Hot-wire Ignition (HWI)	PLC 3		UL 746
Flammability	Nominal Value		Test Method
Flame Rating			UL 94
1.50 mm	V-0		
2.49 mm	5VA		
Fill Analysis	Nominal Value	Unit	Test Method
Melt Viscosity (200°C, 1000 sec ⁻¹)	290	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.	Type I, 5.0 mm/min
5.	Type I, 5.0 mm/min
6.	1.3 mm/min
7.	1.3 mm/min
8.	80*10*4 sp=62mm
9.	80*10*4
10.	80*10*4
11.	80*10*4 mm
12.	Rate B (120°C/h), Loading 2 (50 N)
13.	Tungsten Electrode

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China



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