

# Product Comparison

## Technical Data

Product Description					
CYCOLOY™ FR Resin CY6414 - Europe	CYCOLOY CY6414 is an impact modified PC blend, medium flow and high heat resistant, injection moldable, non chlorinated/brominated flame retardant grade. It has a UL94 V0@1.2mm and 5VB@2.5mm flame rating.				
Generic PC+ABS	This data represents typical values that have been calculated from all products classified as: Generic PC+ABS  This information is provided for comparative purposes only.				
General	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycloy CY6414 (GG)		
Manufacturer / Supplier	• SABIC	• Generic	• Underwriters Laboratories Inc.		
Generic Symbol	• PC+ABS	• PC+ABS	• Unspecified		
Material Status	• Commercial: Active	• Commercial: Active	• Commercial: Active		
Availability	• Europe	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America	• North America		
Uses	• Appliances • Electrical Parts • Electrical/Electronic Applications • Electronic Displays • Lighting Applications • Medical/Healthcare Applications	--	--		
Also Available In	• Asia Pacific	• Asia Pacific • Europe • Latin America • North America	--		
Physical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycloy CY6414 (GG)	Unit	Test Method
Density / Specific Gravity	--	1.10 to 1.21	--	g/cm <sup>3</sup>	ASTM D792
	1.20	1.10 to 1.21	--	g/cm <sup>3</sup>	ISO 1183
	--	1.10 to 1.19	--	g/cm <sup>3</sup>	ASTM D1505
Apparent (Bulk) Density	--	0.60 to 0.65	--	g/cm <sup>3</sup>	ISO 60
Melt Mass-Flow Rate (MFR)					
260°C/5.0 kg	--	4.8 to 30	--	g/10 min	ASTM D1238
260°C/5.0 kg	--	12 to 29	--	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (260°C/5.0 kg)	13	8.0 to 49	--	cm <sup>3</sup> /10min	ISO 1133



Physical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
Spiral Flow	--	39.6 to 68.6	--	cm	
Molding Shrinkage					
Flow	--	0.45 to 0.74	--	%	ASTM D955
Across Flow	--	0.54 to 0.62	--	%	ASTM D955
--	--	0.48 to 0.65	--	%	ISO 294-4
Flow : 3.20 mm	0.40 to 0.80	--	--	%	Internal Method
Water Absorption					
24 hr	--	0.096 to 0.22	--	%	ASTM D570
24 hr, 23°C	--	0.088 to 0.70	--	%	ISO 62
Saturation	--	0.10 to 0.61	--	%	ASTM D570
Saturation, 23°C	0.30	0.090 to 0.70	--	%	ISO 62
Equilibrium, 23°C, 50% RH	0.10	0.057 to 0.25	--	%	ISO 62
Mechanical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
Tensile Modulus					
--	--	1850 to 3050	--	MPa	ASTM D638
-- <sup>2</sup>	2330	--	--	MPa	ASTM D638
--	--	1620 to 3190	--	MPa	ISO 527-1
--	2420	--	--	MPa	ISO 527-1/1
Tensile Strength					
Yield <sup>3</sup>	64.0	--	--	MPa	ASTM D638
Yield	--	48.4 to 65.2	--	MPa	ASTM D638
Yield	--	35.0 to 67.1	--	MPa	ISO 527-2
Yield	66.0	--	--	MPa	ISO 527-2/50
Break	--	39.2 to 62.3	--	MPa	ASTM D638
Break <sup>3</sup>	62.0	--	--	MPa	ASTM D638
Break	--	39.2 to 58.5	--	MPa	ISO 527-2
Break	67.0	--	--	MPa	ISO 527-2/50
--	--	39.5 to 66.2	--	MPa	ASTM D638
--	--	47.8 to 60.5	--	MPa	ISO 527-2



Mechanical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
<b>Tensile Elongation</b>					
Yield	--	1.5 to 21	--	%	ASTM D638
Yield <sup>3</sup>	6.0	--	--	%	ASTM D638
Yield	--	2.5 to 7.4	--	%	ISO 527-2
Yield	5.7	--	--	%	ISO 527-2/50
Break	--	29 to 110	--	%	ASTM D638
Break <sup>3</sup>	85	--	--	%	ASTM D638
Break	--	28 to 100	--	%	ISO 527-2
Break	> 100	--	--	%	ISO 527-2/50
Nominal Tensile Strain at Break	--	49 to 100	--	%	ISO 527-2
<b>Flexural Modulus</b>					
--	--	2010 to 2770	--	MPa	ASTM D790
--	--	1810 to 2700	--	MPa	ISO 178
-- <sup>4</sup>	2470	--	--	MPa	ISO 178
<b>Flexural Strength</b>					
--	--	68.4 to 105	--	MPa	ASTM D790
--	--	69.0 to 102	--	MPa	ISO 178
-- <sup>4,5</sup>	96.0	--	--	MPa	ISO 178
Yield	--	68.4 to 105	--	MPa	ASTM D790
Break	--	63.7 to 83.7	--	MPa	ASTM D790
Taber Abrasion Resistance	--	54.0 to 82.0	--	mg	ASTM D1044
Impact	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
<b>Charpy Notched Impact Strength</b>					
--	--	6.5 to 63	--	kJ/m <sup>2</sup>	ISO 179
-30°C <sup>6</sup>	12	--	--	kJ/m <sup>2</sup>	ISO 179/1eA
23°C <sup>6</sup>	20	--	--	kJ/m <sup>2</sup>	ISO 179/1eA
<b>Charpy Unnotched Impact Strength</b>					
--	--	22 to 100	--	kJ/m <sup>2</sup>	ISO 179
-30°C <sup>6</sup>	No Break	--	--		ISO 179/1eU
23°C <sup>6</sup>	No Break	--	--		ISO 179/1eU



Impact	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Notched Izod Impact					
--	--	48 to 710	--	J/m	ASTM D256
--	--	9.0 to 57	--	kJ/m <sup>2</sup>	ISO 180
-30°C <sup>7</sup>	12	--	--	kJ/m <sup>2</sup>	ISO 180/1A
23°C <sup>7</sup>	15	--	--	kJ/m <sup>2</sup>	ISO 180/1A
Notched Izod Impact (Area)	--	39.2 to 65.1	--	kJ/m <sup>2</sup>	ASTM D256
Unnotched Izod Impact					
--	--	380 to 2200	--	J/m	ASTM D4812
--	--	94 to 100	--	kJ/m <sup>2</sup>	ISO 180
-30°C <sup>7</sup>	No Break	--	--		ISO 180/1U
23°C <sup>7</sup>	No Break	--	--		ISO 180/1U
Instrumented Dart Impact					
--	--	42.8 to 65.3	--	J	ASTM D3763
--	--	35.0 to 105	--	J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force	--	4260 to 5400	--	N	ISO 6603-2
Gardner Impact	--	35.6 to 36.3	--	J	ASTM D3029
Hardness	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Rockwell Hardness					
--	--	100 to 120	--		ASTM D785
--	--	106 to 124	--		ISO 2039-2
Shore Hardness	--	79 to 80	--		ISO 868
Ball Indentation Hardness	--	89.3 to 133	--	MPa	ISO 2039-1
Thermal	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Deflection Temperature Under Load					
0.45 MPa, Unannealed	--	86.9 to 131	--	°C	ASTM D648
0.45 MPa, Unannealed	--	87.6 to 131	--	°C	ISO 75-2/B
0.45 MPa, Annealed	--	92.0 to 129	--	°C	ISO 75-2/B
1.8 MPa, Unannealed	--	79.9 to 116	--	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	118	--	--	°C	ASTM D648
1.8 MPa, Unannealed	--	78.9 to 113	--	°C	ISO 75-2/A
1.8 MPa, Unannealed, 4.00 mm, 64.0 mm Span <sup>7</sup>	116	--	--	°C	ISO 75-2/Af
1.8 MPa, Annealed	--	94.6 to 110	--	°C	ISO 75-2/A
Continuous Use Temperature	--	60.0 to 100	--	°C	ASTM D794



Thermal	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
Vicat Softening Temperature					
--	--	89.9 to 139	--	°C	ASTM D1525
--	134	--	--	°C	ISO 306/B120
--	133	--	--	°C	ISO 306/B50
--	--	92.5 to 141	--	°C	ISO 306
Ball Pressure Test					IEC 60695-10-2
123 to 127°C <sup>8</sup>	Pass	--	--		
123 to 127°C	Pass	--	--		
125°C	--	--	Pass		
CLTE					
Flow	--	7.1E-5 to 8.3E-5	--	cm/cm/°C	ASTM D696
Flow	--	5.3E-5 to 7.6E-5	--	cm/cm/°C	ASTM E831
Flow	--	5.5E-5 to 1.0E-4	--	cm/cm/°C	ISO 11359-2
Flow : -40 to 40°C	7.0E-5	--	--	cm/cm/°C	ISO 11359-2
Transverse	--	6.9E-5 to 9.1E-5	--	cm/cm/°C	ASTM E831
Transverse	--	5.6E-5 to 8.6E-5	--	cm/cm/°C	ISO 11359-2
Transverse : -40 to 40°C	7.0E-5	--	--	cm/cm/°C	ISO 11359-2
Thermal Conductivity					
--	--	0.20 to 0.37	--	W/m/K	ASTM C177
--	--	0.20	--	W/m/K	ISO 8302
RTI Elec					UL 746B
--	105	60.0 to 90.4	--	°C	
0.75 mm	--	--	105	°C	
1.0 mm	--	--	105	°C	
1.1 to 1.2 mm	--	--	105	°C	
1.2 mm	--	--	105	°C	
2.0 mm	--	--	105	°C	
2.5 mm	--	--	105	°C	
3.0 mm	--	--	105	°C	



Thermal	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
RTI Imp					UL 746B
--	95.0	60.0 to 90.0	--	°C	
0.75 mm	--	--	95.0	°C	
1.0 mm	--	--	95.0	°C	
1.1 to 1.2 mm	--	--	95.0	°C	
1.2 mm	--	--	95.0	°C	
2.0 mm	--	--	95.0	°C	
2.5 mm	--	--	95.0	°C	
3.0 mm	--	--	100	°C	
RTI Str					UL 746B
--	100	60.0 to 90.4	--	°C	
0.75 mm	--	--	100	°C	
1.0 mm	--	--	100	°C	
1.1 to 1.2 mm	--	--	100	°C	
1.2 mm	--	--	100	°C	
2.0 mm	--	--	100	°C	
2.5 mm	--	--	100	°C	
3.0 mm	--	--	105	°C	
Electrical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Surface Resistivity					
--	--	1.0E+4 to 2.5E+15	--	ohms	ASTM D257
--	4.0E+16	5.1E+3 to 1.3E+16	--	ohms	IEC 60093
Volume Resistivity					
--	--	1.0 to 1.0E+17	1.0E+15	ohms·cm	ASTM D257
--	1.0E+15	1.0E+11 to 5.0E+16	1.0E+15	ohms·cm	IEC 60093
Dielectric Strength					
--	--	8.5 to 40	25	kV/mm	ASTM D149
--	--	15 to 37	--	kV/mm	IEC 60243-1
Dielectric Constant					
--	--	3.00 to 3.01	--		ASTM D150
1 kHz	3.01	--	--		ASTM D150
1 MHz	2.95	--	--		ASTM D150
--	--	2.89 to 3.10	--		IEC 60250
--	--	2.95	--		IEC 60250



Electrical	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6414 (GG)	Unit	Test Method
Dissipation Factor					
--	--	4.9E-3 to 9.1E-3	--		ASTM D150
1 kHz	1.7E-3	--	--		ASTM D150
1 MHz	8.8E-3	--	--		ASTM D150 IEC 60250
--	--	1.0E-3 to 9.6E-3	--		IEC 60250
Arc Resistance	--	119 to 123	--	sec	ASTM D495
Comparative Tracking Index (CTI)	PLC 3	--	PLC 3		UL 746A
Comparative Tracking Index	--	218 to 600	175	V	IEC 60112
High Amp Arc Ignition (HAI)					UL 746A
-- <sup>9</sup>	PLC 1	--	--		
0.75 mm	--	--	PLC 1		
1.0 mm	--	--	PLC 1		
2.0 mm	--	--	PLC 1		
3.0 mm	--	--	PLC 1		
Hot-wire Ignition (HWI)					UL 746A
--	PLC 2	--	--		
0.75 mm	--	--	PLC 3		
1.0 mm	--	--	PLC 3		
2.0 mm	--	--	PLC 2		
3.0 mm	--	--	PLC 2		
<b>Flammability</b>	<b>CYCOLOY™ FR Resin CY6414 - Europe</b>	<b>Generic PC+ABS</b>	<b>UL Yellow Card Cycology CY6414 (GG)</b>	<b>Unit</b>	<b>Test Method</b>
Burning Rate	--	33 to 100	--	mm/min	ISO 3795



# Product Comparison

Flammability	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
<b>Flame Rating</b>					
1.0 mm, BK	--	--	V-2		UL 94 IEC 60695-11-10, -20
1.1 to 1.2 mm, BK	--	--	V-1		UL 94 IEC 60695-11-10, -20
1.2 mm	V-0	--	--		UL 94
1.2 mm, ALL	--	--	V-0		UL 94 IEC 60695-11-10, -20
2.0 mm, ALL	--	--	V-0		UL 94 IEC 60695-11-10, -20
2.0 mm, NC	--	--	• V-0 • 5VB		UL 94 IEC 60695-11-10, -20
2.5 mm, ALL	--	--	• V-0 • 5VB		UL 94 IEC 60695-11-10, -20
3.0 mm, ALL	--	--	• V-0 • 5VB		UL 94 IEC 60695-11-10, -20
2.5 mm	5VB	--	--		UL 94
<b>Glow Wire Flammability Index</b>					
--	--	642 to 960	--	°C	IEC 60695-2-12
0.75 mm <sup>8</sup>	960	--	--	°C	
0.75 mm	--	--	960	°C	
1.0 mm	--	--	960	°C	
2.0 mm	--	--	960	°C	
2.5 mm	--	--	960	°C	
3.0 mm	--	--	960	°C	
<b>Glow Wire Ignition Temperature</b>					
--	--	694 to 960	--	°C	IEC 60695-2-13
0.75 mm <sup>8</sup>	775	--	--	°C	
0.75 mm	--	--	930	°C	
1.0 mm	--	--	900	°C	
1.5 mm <sup>8</sup>	775	--	--	°C	
2.0 mm	--	--	850	°C	
2.5 mm	--	--	825	°C	
3.0 mm <sup>8</sup>	775	--	--	°C	
3.0 mm	--	--	800	°C	





Flammability	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Oxygen Index	--	28 to 32	--	%	ASTM D2863
	32	23 to 34	--	%	ISO 4589-2

Fill Analysis	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit	Test Method
Melt Viscosity	--	170 to 255	--	Pa·s	ASTM D3835

Injection	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit
Drying Temperature	90 to 100	79 to 110	--	°C
Drying Time	2.0 to 4.0	2.7 to 5.0	--	hr
Drying Time, Maximum	--	6.0	--	hr
Suggested Max Moisture	0.020	0.020 to 0.024	--	%
Suggested Shot Size	--	50 to 55	--	%
Hopper Temperature	60 to 80	70 to 74	--	°C
Rear Temperature	210 to 260	218 to 266	--	°C
Middle Temperature	230 to 290	229 to 274	--	°C
Front Temperature	240 to 300	234 to 270	--	°C
Nozzle Temperature	230 to 290	249 to 273	--	°C
Processing (Melt) Temp	250 to 300	243 to 275	--	°C
Mold Temperature	60 to 90	59 to 86	--	°C
Injection Pressure	--	85.3 to 99.0	--	MPa
Holding Pressure	--	74.7 to 75.0	--	MPa
Back Pressure	--	0.138 to 10.0	--	MPa
Screw Speed	--	52 to 56	--	rpm
Vent Depth	--	0.050 to 0.057	--	mm

**Injection Notes**

Generic PC+ABS This data represents typical values that have been calculated from all products classified as: Generic PC+ABS  
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Extrusion	CYCOLOY™ FR Resin CY6414 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6414 (GG)	Unit
Drying Temperature	--	89 to 95	--	°C
Drying Time	--	3.0 to 7.0	--	hr
Melt Temperature	--	250 to 257	--	°C



Extrusion Notes

Generic  
PC+ABS

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Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> 5.0 mm/min

<sup>3</sup> Type I, 50 mm/min

<sup>4</sup> 2.0 mm/min

<sup>5</sup> at Yield

<sup>6</sup> 80\*10\*4 sp=62mm

<sup>7</sup> 80\*10\*4 mm

<sup>8</sup> by VDE

<sup>9</sup> Surface

