

# Product Comparison

## Technical Data

Product Description					
CYCOLOY™ FR Resin CY6310 - Europe	CYCOLOY CY6310 Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS) blend is an impact modified, high flow and heat resistant, injection moldable, non chlorinated/brominated flame retardant grade. It has a UL94 V0@1.5mm, 5VA@2.9 and 5VB@2.3mm flame rating. This grade is an excellent candidate for a variety of large size applications.				
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 CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310		
Manufacturer / Supplier	<ul style="list-style-type: none"> <li>SABIC</li> </ul>	<ul style="list-style-type: none"> <li>Generic</li> </ul>	<ul style="list-style-type: none"> <li>Underwriters Laboratories Inc.</li> </ul>		
Generic Symbol	<ul style="list-style-type: none"> <li>PC+ABS</li> </ul>	<ul style="list-style-type: none"> <li>PC+ABS</li> </ul>	<ul style="list-style-type: none"> <li>Unspecified</li> </ul>		
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>		
Availability	<ul style="list-style-type: none"> <li>Europe</li> </ul>	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>	<ul style="list-style-type: none"> <li>North America</li> </ul>		
Uses	<ul style="list-style-type: none"> <li>Appliances</li> <li>Construction Applications</li> <li>Electrical/Electronic Applications</li> <li>Lighting Applications</li> <li>Water Management</li> </ul>	--	--		
Also Available In	<ul style="list-style-type: none"> <li>Asia Pacific</li> </ul>	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>	--		
Physical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310	Unit	Test Method
Density / Specific Gravity	1.17	1.10 to 1.21	--	g/cm <sup>3</sup>	ASTM D792 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



Physical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Melt Mass-Flow Rate (MFR)					
250°C/2.16 kg	16	--	--	g/10 min	ASTM D1238
260°C/2.16 kg	20	--	--	g/10 min	ASTM D1238
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)					ISO 1133
260°C/2.16 kg	19	--	--	cm³/10min	
260°C/5.0 kg	48	8.0 to 49	--	cm³/10min	
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 0.60	--	--	%	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	0.60	0.090 to 0.70	--	%	ISO 62
Equilibrium, 23°C, 50% RH	0.20	0.057 to 0.25	--	%	ISO 62
Mechanical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Tensile Modulus					
--	--	1850 to 3050	--	MPa	ASTM D638
-- <sup>2</sup>	2700	--	--	MPa	ASTM D638
--	--	1620 to 3190	--	MPa	ISO 527-1
--	2700	--	--	MPa	ISO 527-1/1



Mechanical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310	Unit	Test Method
<b>Tensile Strength</b>					
Yield <sup>3</sup>	63.0	--	--	MPa	ASTM D638
Yield	--	48.4 to 65.2	--	MPa	ASTM D638
Yield	--	35.0 to 67.1	--	MPa	ISO 527-2
Yield	63.0	--	--	MPa	ISO 527-2/50
Break	--	39.2 to 62.3	--	MPa	ASTM D638
Break <sup>3</sup>	50.0	--	--	MPa	ASTM D638
Break	--	39.2 to 58.5	--	MPa	ISO 527-2
Break	51.0	--	--	MPa	ISO 527-2/50
--	--	39.5 to 66.2	--	MPa	ASTM D638
--	--	47.8 to 60.5	--	MPa	ISO 527-2
<b>Tensile Elongation</b>					
Yield	--	1.5 to 21	--	%	ASTM D638
Yield <sup>3</sup>	4.2	--	--	%	ASTM D638
Yield	--	2.5 to 7.4	--	%	ISO 527-2
Yield	4.4	--	--	%	ISO 527-2/50
Break	--	29 to 110	--	%	ASTM D638
Break <sup>3</sup>	> 50	--	--	%	ASTM D638
Break	--	28 to 100	--	%	ISO 527-2
Break	> 50	--	--	%	ISO 527-2/50
Nominal Tensile Strain at Break	--	49 to 100	--	%	ISO 527-2
<b>Flexural Modulus</b>					
50.0 mm Span <sup>4</sup>	2700	--	--	MPa	ASTM D790
--	--	2010 to 2770	--	MPa	ASTM D790
--	--	1810 to 2700	--	MPa	ISO 178
-- <sup>5</sup>	2650	--	--	MPa	ISO 178
<b>Flexural Strength</b>					
--	--	68.4 to 105	--	MPa	ASTM D790
--	--	69.0 to 102	--	MPa	ISO 178
-- <sup>5,6</sup>	91.0	--	--	MPa	ISO 178
Yield	--	68.4 to 105	--	MPa	ASTM D790
Yield, 50.0 mm Span <sup>4</sup>	101	--	--	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 CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Charpy Notched Impact Strength					
--	--	6.5 to 63	--	kJ/m <sup>2</sup>	ISO 179
-30°C <sup>7</sup>	14	--	--	kJ/m <sup>2</sup>	ISO 179/1eA
23°C <sup>7</sup>	55	--	--	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy Unnotched Impact Strength					
--	--	22 to 100	--	kJ/m <sup>2</sup>	ISO 179
-30°C <sup>7</sup>	No Break	--	--		ISO 179/1eU
23°C <sup>7</sup>	No Break	--	--		ISO 179/1eU
Notched Izod Impact					
--	--	48 to 710	--	J/m	ASTM D256
-30°C	120	--	--	J/m	ASTM D256
23°C	600	--	--	J/m	ASTM D256
--	--	9.0 to 57	--	kJ/m <sup>2</sup>	ISO 180
-30°C <sup>8</sup>	13	--	--	kJ/m <sup>2</sup>	ISO 180/1A
23°C <sup>8</sup>	50	--	--	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>8</sup>	No Break	--	--		ISO 180/1U
23°C <sup>8</sup>	No Break	--	--		ISO 180/1U
Instrumented Dart Impact					
--	--	42.8 to 65.3	--	J	ASTM D3763
23°C, Total Energy	65.0	--	--	J	ASTM D3763
--	105	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 CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	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 CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310	Unit	Test Method
<b>Deflection Temperature Under Load</b>					
0.45 MPa, Unannealed	--	86.9 to 131	--	°C	ASTM D648
0.45 MPa, Unannealed, 3.20 mm	100	--	--	°C	ASTM D648
0.45 MPa, Unannealed	--	87.6 to 131	--	°C	ISO 75-2/B
0.45 MPa, Unannealed, 4.00 mm, 64.0 mm Span <sup>8</sup>	102	--	--	°C	ISO 75-2/Bf
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, 3.20 mm	88.0	--	--	°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>8</sup>	90.0	--	--	°C	ISO 75-2/Af
1.8 MPa, Annealed	--	94.6 to 110	--	°C	ISO 75-2/A
<b>Continuous Use Temperature</b>	--	60.0 to 100	--	°C	ASTM D794
<b>Vicat Softening Temperature</b>					
--	--	89.9 to 139	--	°C	ASTM D1525
--	109	--	--	°C	ASTM D1525 <sup>9</sup> ISO 306/B50 <sup>9</sup>
--	111	--	--	°C	ISO 306/B120
--	--	92.5 to 141	--	°C	ISO 306
<b>Ball Pressure Test (98 to 102°C)</b>	Pass	--	--		IEC 60695-10-2
<b>CLTE</b>					
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 : -40 to 40°C	6.8E-5	--	--	cm/cm/°C	ASTM E831 ISO 11359-2
Flow	--	5.5E-5 to 1.0E-4	--	cm/cm/°C	ISO 11359-2
Transverse	--	6.9E-5 to 9.1E-5	--	cm/cm/°C	ASTM E831
Transverse : -40 to 40°C	7.0E-5	--	--	cm/cm/°C	ASTM E831 ISO 11359-2
Transverse	--	5.6E-5 to 8.6E-5	--	cm/cm/°C	ISO 11359-2
<b>Thermal Conductivity</b>					
--	--	0.20 to 0.37	--	W/m/K	ASTM C177
--	--	0.20	--	W/m/K	ISO 8302



Thermal	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
RTI Elec					UL 746B
--	85.0	60.0 to 90.4	--	°C	
0.75 mm	--	--	85.0	°C	
1.0 mm	--	--	85.0	°C	
1.5 mm	--	--	85.0	°C	
2.0 mm	--	--	85.0	°C	
2.3 mm	--	--	85.0	°C	
2.9 mm	--	--	85.0	°C	
3.0 mm	--	--	85.0	°C	
RTI Imp					UL 746B
--	85.0	60.0 to 90.0	--	°C	
0.75 mm	--	--	85.0	°C	
1.0 mm	--	--	85.0	°C	
1.5 mm	--	--	85.0	°C	
2.0 mm	--	--	85.0	°C	
2.3 mm	--	--	85.0	°C	
2.9 mm	--	--	85.0	°C	
3.0 mm	--	--	85.0	°C	
RTI Str					UL 746B
--	85.0	60.0 to 90.4	--	°C	
0.75 mm	--	--	85.0	°C	
1.0 mm	--	--	85.0	°C	
1.5 mm	--	--	85.0	°C	
2.0 mm	--	--	85.0	°C	
2.3 mm	--	--	85.0	°C	
2.9 mm	--	--	85.0	°C	
3.0 mm	--	--	85.0	°C	
Electrical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Surface Resistivity					
--	--	1.0E+4 to 2.5E+15	--	ohms	ASTM D257
--	> 1.0E+15	5.1E+3 to 1.3E+16	--	ohms	IEC 60093
Volume Resistivity					
--	--	1.0 to 1.0E+17	--	ohms·cm	ASTM D257
--	> 1.0E+15	1.0E+11 to 5.0E+16	--	ohms·cm	IEC 60093



# Product Comparison

Electrical	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310	Unit	Test Method
Dielectric Strength					
--	--	8.5 to 40	--	kV/mm	ASTM D149
--	--	15 to 37	--	kV/mm	IEC 60243-1
Dielectric Constant					
--	--	3.00 to 3.01	--		ASTM D150
--	--	2.89 to 3.10	--		IEC 60250
--	--	2.95	--		IEC 60250
Dissipation Factor					
--	--	4.9E-3 to 9.1E-3	--		ASTM D150
--	--	1.0E-3 to 9.6E-3	--		IEC 60250
Arc Resistance				sec	ASTM D495
Comparative Tracking Index (CTI)	PLC 0	--	PLC 0		UL 746A
Comparative Tracking Index	575	218 to 600	575	V	IEC 60112
High Amp Arc Ignition (HAI)					UL 746A
-- <sup>10</sup>	PLC 0	--	--		
0.75 mm	--	--	PLC 0		
1.5 mm	--	--	PLC 0		
2.0 mm	--	--	PLC 0		
2.9 mm	--	--	PLC 0		
Hot-wire Ignition (HWI)					UL 746A
--	PLC 3	--	--		
0.75 mm	--	--	PLC 3		
1.5 mm	--	--	PLC 3		
2.0 mm	--	--	PLC 3		
2.9 mm	--	--	PLC 2		
Flammability	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycology CY6310	Unit	Test Method
Burning Rate	--	33 to 100	--	mm/min	ISO 3795



Flammability	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Flame Rating					
0.75 mm	V-2	--	--		UL 94
0.75 mm, ALL	--	--	V-2		UL 94 IEC 60695-11-10, -20
1.0 mm, ALL	--	--	V-2		UL 94 IEC 60695-11-10, -20
1.5 mm	V-0	--	--		UL 94
1.5 mm, ALL	--	--	V-0		UL 94 IEC 60695-11-10, -20
2.0 mm, ALL	--	--	V-0		UL 94 IEC 60695-11-10, -20
2.3 mm, ALL	--	--	• V-0 • 5VB		UL 94 IEC 60695-11-10, -20
2.9 mm, ALL	--	--	• V-0 • 5VA		UL 94 IEC 60695-11-10, -20
2.3 mm	5VB	--	--		UL 94
2.9 mm	5VA	--	--		UL 94
Glow Wire Flammability Index					IEC 60695-2-12
--	--	642 to 960	--	°C	
1.0 mm	--	--	960	°C	
1.5 mm	--	--	960	°C	
2.0 mm	--	--	960	°C	
2.3 mm	--	--	960	°C	
2.9 mm	--	--	960	°C	
3.0 mm	960	--	--	°C	
Glow Wire Ignition Temperature					IEC 60695-2-13
--	--	694 to 960	--	°C	
1.0 mm	--	--	800	°C	
1.5 mm	--	--	800	°C	
2.0 mm	--	--	800	°C	
2.3 mm	--	--	800	°C	
2.9 mm	--	--	800	°C	
Oxygen Index					
--	--	28 to 32	--	%	ASTM D2863
--	30	23 to 34	--	%	ISO 4589-2
Fill Analysis	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit	Test Method
Melt Viscosity	--	170 to 255	--	Pa·s	ASTM D3835





Injection	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	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 240	218 to 266	--	°C
Middle Temperature	230 to 270	229 to 274	--	°C
Front Temperature	240 to 280	234 to 270	--	°C
Nozzle Temperature	230 to 270	249 to 273	--	°C
Processing (Melt) Temp	250 to 280	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  
This information is provided for comparative purposes only.

Extrusion	CYCOLOY™ FR Resin CY6310 - Europe	Generic PC+ABS	UL Yellow Card Cycoloy CY6310	Unit
Drying Temperature	--	89 to 95	--	°C
Drying Time	--	3.0 to 7.0	--	hr
Melt Temperature	--	250 to 257	--	°C

**Extrusion Notes**

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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> 1.3 mm/min

<sup>5</sup> 2.0 mm/min

<sup>6</sup> at Yield

<sup>7</sup> 80\*10\*4 sp=62mm

<sup>8</sup> 80\*10\*4 mm

<sup>9</sup> Rate A (50°C/h), Loading 2 (50 N)

<sup>10</sup> Surface

