

SABIC® PC RESIN PC1804R

POLYCARBONATE FOR GENERAL PURPOSE MOLDING MARKET

DESCRIPTION

PC1804R resin is a medium-high flow (MFR = 18 at 300° C/1.2kg), natural, FDA food contact complaint, heat stabilized, polycarbonate product with mold release designed for use in the general purpose molding market.

TYPICAL APPLICATIONS

PC1804R resin is designed for use in the general purpose molding market.

TYPICAL PROPERTY VALUES

Revision 20181012

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min (1)	63	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	6	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	>70	%	ASTM D 638
Tensile Modulus, 50 mm/min	2350	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	90	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2300	MPa	ASTM D 790
Hardness, Rockwell R	120	-	ASTM D 785
Tensile Stress, yield, 50 mm/min	63	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	6	%	ISO 527
Tensile Strain, break, 50 mm/min	>70	%	ISO 527
Tensile Modulus, 1 mm/min	2350	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	90	MPa	ISO 178
Flexural Modulus, 2 mm/min	2300	MPa	ISO 178
Hardness, Rockwell R	120	-	ISO 2039-2
IMPACT			
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D 4812
Izod Impact, notched, 23°C	700	J/m	ASTM D 256
Instrumented Impact Energy @ peak, 23°C	65	J	ASTM D 3763
Izod Impact, unnotched 80*10*3 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*3 -30°C	NB	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*3 +23°C	70	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*3 -30°C	12	kJ/m²	ISO 180/1A
THERMAL			
Vicat Softening Temp, Rate B/50	141	°C	ASTM D 1525
HDT, 0.45 MPa, 3.2 mm	135	°C	ASTM D 648
HDT, 1.82 MPa, 3.2 mm	124	°C	ASTM D 648
CTE, -40°C to 95°C, flow	7.E-05	1/°C	ASTM E 831
Thermal Conductivity	0.2	W/m-°C	ASTM C177
Thermal Conductivity	0.2	W/m-°C	ISO 8302
CTE, 23°C to 80°C, flow	7.E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	Passes	-	IEC 60695-10-2



Vicat Softening Temp. Rate 8/50	PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
HDT/At, 1.8 MPa Flatw 80*10*4 sp=64mm 124 "C ISO 75/Af PHYSICAL Specific Gravity 1.2 - ASTM D 792 Water Absorption, equilibrium, 23C 3.8 ASTM D 570 Mold Shrinkage, flow, 3.2 mm 0.5 − 0.7 % SABIC method Mold Shrinkage, flow, 3.2 mm 0.5 − 0.7 % SABIC method Melt Flow Rate, 300°C/1.2 kgf 18 g/l Dmin ASTM D 1238 Density 1.2 g/cm³ ISO 183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 − 90 % ASTM D 1003 Haze, 2.54 mm <0.8 % ASTM D 1003 Haze, 2.54 mm <0.8 % ASTM D 1003 Refractive Index 1.586 <0 ASTM D 542 Refractive Index 1.586 <0 ASTM D 150 ELECTRICAL Volume Resistivity ASTM D 257 Diele	Vicat Softening Temp, Rate B/50	141	°C	ISO 306
PHYSICAL Specific Gravity 1.2 - ASTM D 792 Water Absorption, equilibrium, 23C 0.35 % ASTM D 570 Mold Shrinkage, flow, 3.2 mm 0.5 – 0.7 % SABIC method Melt Flow Rate, 300°C/1.2 kgf 18 g/10 min ASTM D 1238 Density 1.2 g/cm³ ISO 1183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm²/l 0 min ISO 133 OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Haze, 2.54 mm <0.8	HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	135	°C	ISO 75/Bf
Name	HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	124	°C	ISO 75/Af
Water Absorption, equilibrium, 23C 0.35 % ASTM D 570 Mold Shrinkage on Tensile Bar, flow 0.5 – 0.7 % SABIC method Mold Shrinkage, flow, 3.2 mm 0.5 – 0.7 % SABIC method Melt Flow Rate, 300°C/1.2 kgf 18 g/10 min ASTM D 1238 Density 1.2 g/cm³ ISO 183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Haze, 2.54 mm <0.8 % ASTM D 502 Refractive Index	PHYSICAL			
Water Absorption, equilibrium, 23C 0.35 % ASTM D 570 Mold Shrinkage on Tensile Bar, flow 0.5 – 0.7 % SABIC method Mold Shrinkage, flow, 3.2 mm 0.5 – 0.7 % SABIC method Melt Flow Rate, 300°C/1.2 kgf 18 g/10 min ASTM D 1238 Density 1.2 g/cm³ ISO 183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Haze, 2.54 mm <0.8 % ASTM D 502 Refractive Index	Specific Gravity	1.2		ASTM D 792
Mold Shrinkage, flow, 3.2 mm 0.5 − 0.7 % SABIC method Melt Flow Rate, 300°C/1.2 kgf 18 g/10 min ASTM D 1238 Density 1.2 g/cm³ ISO 1183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm²/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 − 90 % ASTM D 1003 Refractive Index 1.586 - ASTM D 542 Refractive Index University of the Colspan="2">University of the Colspan="2">University of the Colspan="2">University of the Colspan="2">Wolfman ASTM D 542 Relative Permittivity, 1 Minz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Dissipation Factor, 1 MHz 3 - ASTM D 150		0.35	%	ASTM D 570
Melt Flow Rate, 300°C/1.2 kgf 18 g/10 min ASTM D 1238 Density 1.2 g/cm³ ISO 1183 Water Absorption, (23°C/sat) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Haze, 2.54 mm <0.8	Mold Shrinkage on Tensile Bar, flow	0.5 - 0.7	%	SABIC method
Density	Mold Shrinkage, flow, 3.2 mm	0.5 - 0.7	%	SABIC method
Water Absorption, (23°C/satt) 0.35 % ISO 62 Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Refractive Index 1.586 - ASTM D 542 Refractive Index 1.586 - ASTM D 542 Refractive Index 1.586 - ASTM D 542 ELECTRICAL Volume Resistivity >1.E+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 KV/mm ASTM D 150 Relative Permittivity, 60 Hz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dislectric Strength, 1.6 mm 27 KV/mm IEC 60093 Dielectric Strength, 1.6 mm 27 KV/mm IEC 600250 Relative Permittivity, 60 Hz 3 - IEC 600250 Relative Permittivity, 1 MHz 3 <td>Melt Flow Rate, 300°C/1.2 kgf</td> <td>18</td> <td>g/10 min</td> <td>ASTM D 1238</td>	Melt Flow Rate, 300°C/1.2 kgf	18	g/10 min	ASTM D 1238
Melt Volume Rate, MVR at 300°C/1.2 kg 17 cm³/10 min ISO 1133 OPTICAL Light Transmission, 2.54 mm 88 − 90 % ASTM D 1003 Refractive Index 1.586 - ASTM D 542 Refractive Index 1.586 - ASTM D 542 Refractive Index 1.586 - ASTM D 542 ELECTRICAL Volume Resistivity >1.£+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 KV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.£+15 Ohm-cm IEC 60093 Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.£+15 Ohm-cm IEC 60243-1 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - IEC 60250 Relative Permittivity, 1 MHz 3	Density	1.2	g/cm³	ISO 1183
OPTICAL Light Transmission, 2.54 mm 88 – 90 % ASTM D 1003 Haze, 2.54 mm <0.8	Water Absorption, (23°C/sat)	0.35	%	ISO 62
Light Transmission, 2.54 mm 88 − 90 % ASTM D 1003 Haze, 2.54 mm <0.8 % ASTM D 1003 Refractive Index 1.586 - ASTM D 542 Refractive Index 1.586 - ISO 489 ELECTRICAL Volume Resistivity >1.E±15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 kV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E±15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.001 - IEC 60250 FLAME CHARACTERISTICS <td>Melt Volume Rate, MVR at 300°C/1.2 kg</td> <td>17</td> <td>cm³/10 min</td> <td>ISO 1133</td>	Melt Volume Rate, MVR at 300°C/1.2 kg	17	cm³/10 min	ISO 1133
Haze, 2.54 mm	OPTICAL			
Refractive Index 1.586 - ASTM D542 Refractive Index 1.586 - ISO 489 ELECTRICAL Volume Resistivity >1.E+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 kV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS IEC 60250 IEC 60250	Light Transmission, 2.54 mm	88 – 90	%	ASTM D 1003
Refractive Index 1.586 - ISO 489 ELECTRICAL Volume Resistivity >1.E+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 KV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 KV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Haze, 2.54 mm	<0.8	%	ASTM D 1003
ELECTRICAL Volume Resistivity >1.E+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 kV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Volume Resistivity >1.E+15 Ohm-cm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Refractive Index	1.586	-	ASTM D542
Volume Resistivity >1.E+15 Ohm-cm ASTM D 257 Dielectric Strength, 1.6 mm 27 kV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250	Refractive Index	1.586	-	ISO 489
Dielectric Strength, 1.6 mm 27 kV/mm ASTM D 149 Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250	ELECTRICAL			
Relative Permittivity, 60 Hz 3 - ASTM D 150 Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Volume Resistivity	>1.E+15	Ohm-cm	ASTM D 257
Relative Permittivity, 1 MHz 3 - ASTM D 150 Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Dielectric Strength, 1.6 mm	27	kV/mm	ASTM D 149
Dissipation Factor, 60 Hz 0.001 - ASTM D 150 Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Relative Permittivity, 60 Hz	3	-	ASTM D 150
Dissipation Factor, 1 MHz 0.01 - ASTM D 150 Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Relative Permittivity, 1 MHz	3	-	ASTM D 150
Volume Resistivity >1.E+15 Ohm-cm IEC 60093 Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS - IEC 60250	Dissipation Factor, 60 Hz	0.001	-	ASTM D 150
Dielectric Strength, 1.6 mm 27 kV/mm IEC 60243-1 Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Dissipation Factor, 1 MHz	0.01	-	ASTM D 150
Relative Permittivity, 60 Hz 3 - IEC 60250 Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS - IEC 60250	Volume Resistivity	>1.E+15	Ohm-cm	IEC 60093
Relative Permittivity, 1 MHz 3 - IEC 60250 Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Dielectric Strength, 1.6 mm	27	kV/mm	IEC 60243-1
Dissipation Factor, 60 Hz 0.001 - IEC 60250 Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Relative Permittivity, 60 Hz	3	-	IEC 60250
Dissipation Factor, 1 MHz 0.01 - IEC 60250 FLAME CHARACTERISTICS	Relative Permittivity, 1 MHz	3	-	IEC 60250
FLAME CHARACTERISTICS	Dissipation Factor, 60 Hz	0.001	-	IEC 60250
	Dissipation Factor, 1 MHz	0.01	-	IEC 60250
III Recognized 94V-2 Flame Class Rating 15	FLAME CHARACTERISTICS			
Our recognized, 5-79°2 Haine Class rating 1.5 Hill UL 94	UL Recognized, 94V-2 Flame Class Rating	1.5	mm	UL 94
INJECTION MOLDING	INJECTION MOLDING			
Drying Temperature 120 °C	Drying Temperature	120	°C	
Drying Time 2 – 4 hrs	Drying Time	2 – 4	hrs	
Maximum Moisture Content 0.02 %	Maximum Moisture Content	0.02	%	
Melt Temperature 280 – 300 °C	Melt Temperature	280 – 300	°C	
Nozzle Temperature 270 – 290 °C	Nozzle Temperature	270 – 290	°C	
Front - Zone 3 Temperature 280 – 300 °C	Front - Zone 3 Temperature	280 – 300	°C	
Middle - Zone 2 Temperature 270 – 290 °C	Middle - Zone 2 Temperature	270 – 290	°C	
Rear - Zone 1 Temperature260 – 280°C	Rear - Zone 1 Temperature	260 – 280	°C	
Hopper Temperature 60 – 80 °C	Hopper Temperature	60 – 80	°C	
Mold Temperature 80 − 100 °C	Mold Temperature	80 – 100	°C	



(1)

Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

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