

# Carbotex® Polycarbonate Resin

Properties	Standards	Test Conditions	Units	Super High Flow • Standard • Mould Release	• Standard • Mould Release			Flame Retardant (Non-brominated & Non-chlorinated)				Electrically Conductive		
				K-20T28 K-20MRA28	K-20 K-20MRA	K-30 K-30MRA	K-40 K-40MRA	K-30FR	K-30FRT12	KFN-30	KFN-30T12	K-30CF10	K-30CF10X	KG-15CF15
<b>Mechanical Properties</b>														
Izod Impact Strength	ASTM D256	V-Notched 1/8" 23°C	J/m kgf·cm/cm ft·lbf/in	540 55 10	740 75 14	780 80 15	830 85 16	780 80 15	780 80 16	780 80 17	830 85 16	80 8 1.5	80 8.9 1.6	83 8.5 1.6
Tensile Strength at break	ASTM D638	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	63 640 9100	63 640 9100	63 640 9100	63 640 9100	63 640 9100	63 640 9100	63 640 9100	63 640 9100	117 1200 17000	117 1200 17000	140 1430 20300
Tensile Elongation at break	ASTM D638	---	%	120	120	120	120	120	120	120	120	4	4	3
Flexural Strength	ASTM D790	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	85 870 12400	85 870 12400	85 870 12400	85 870 12400	84 860 12200	84 860 12200	85 870 12400	85 870 12400	150 1530 21700	150 1530 21700	170 1750 24800
Flexural Modulus	ASTM D790	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	2160 22000 313000	2160 22000 313000	2160 22000 313000	2160 22000 313000	2160 22000 313000	2160 22000 313000	2160 22000 313000	2160 22000 311000	5700 58200 828000	6860 70000 992000	9100 92500 1310000
Rockwell Hardness	R scale	---	---	120	120	120	120	120	120	120	120	---	---	---
<b>Thermal Properties</b>														
Flammability	UL-94	---	---	V-2 (0.4mm)	V-2 (0.4mm)	V-2 (1.6mm)	V-2 (1.6mm)	V-0 (3.0mm)	V-0 (3.0mm)	V-0 (1.5mm)	V-0 (1.5mm)	---	V-0 (1.6mm)	---
Heat Deflection Temperature	ASTM D648	---	°C	129	131	132	133	132	133	132	133	131	140	146
			°F	264	267	269	271	269	271	269	271	267	284	295
Melt Flow Rate	ASTM D1238	300°C 1.2 kgf	g/10 min.	30	20	15	12	15	12	15	12	---	---	---
<b>Optical Properties</b>														
Light Transmittance	ASTM D1003	3.0mm	%	89	89	89	89	89	89	Opaque	Opaque	---	---	---
Light Refractive Index	ASTM D542	---	---	1.58	1.58	1.58	1.58	1.58	1.58	---	---	---	---	---
Haze	ASTM D1003	3.0mm	%	< 1	< 1	< 1	< 1	< 1	< 1	---	---	---	---	---
<b>Physical Properties</b>														
Specific Gravity	ASTM D792	---	---	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.24	1.24	1.37
Water Absorption	ASTM D570	24 hrs @23°C Water immersion	%	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Mould Shrinkage	ASTM D995	Parallel	%	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.3-0.5	0.3-0.5	0.3-0.5
		Across											0.3-0.5	0.3-0.5
<b>Electrical Properties</b>														
Dielectric Breakdown Strength	ASTM D149	---	kV/mm	20	20	20	20	20	20	20	20	---	---	---
Dielectric Constant	ASTM D150	10 <sup>6</sup> Hz	---	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	---	---	---
Dielectric Dissipation Factor	ASTM D150	10 <sup>6</sup> Hz	---	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	---	---	---
Arc Resistance	ASTM D495	---	sec.	110	110	110	110	110	110	110	110	110	110	110
Volume Resistivity	ASTM D257	---	Ω·cm	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E05	1.0E04	1.0E04

To our best knowledge, the values contained herein are given in good faith. However, no warranty, express or implied is made nor is liability accepted in connection with this information. Actual values of each production lot may vary within normal tolerances. All properties given are typical of uncolored PC and may be affected by colorants, other additives, the design of a mold/die, molding techniques applied, the size and shape of a molded article. In view of these factors, the properties do not relieve customers from carrying out their own investigations and tests. It is entirely customer's responsibility to determine the suitability of any information for any contemplated use. We reserve the right to make additions, deletions, or modifications to the information at any time without prior notification.

# Carbotex® Polycarbonate Resin

Properties	Standards	Test Conditions	Units	Glass Fibre Reinforced				Glass Fibre Reinforced Flame Retardant (Non-brominated & Non-chlorinated)				Wear Resistance + Glass Fibre Reinforced		Wear Resistance
				KG-10MRA	KG-15MRA	KG-20MRA	KG-30MRA	KGN-10MRA	KGN-15MRA	KGN-20MRA	KGN-30MRA	KG-20F10	KG-30F15	K-30F5
<b>Mechanical Properties</b>														
Izod Impact Strength	ASTM D256	V-Notched 1/8" 23°C	J/m kgf·cm/cm ft·lbf/in	69 7 1.3	78 8 1.5	90 9 1.6	100 10 1.8	69 7 1.3	78 8 1.5	90 9 1.6	100 10 1.8	78 8 1.5	118 12 2.2	150 15 2.8
Tensile Strength at break	ASTM D638	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	74 750 11000	98 1000 14200	108 1100 15600	127 1300 18500	74 750 11000	98 1000 14200	108 1100 15600	127 1300 18500	118 1200 17100	120 1220 17400	62 630 9000
Tensile Elongation at break	ASTM D638	---	%	5	4.5	4	3	5	4.5	4	3	4	3	100
Flexural Strength	ASTM D790	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	118 1200 17100	132 1350 19200	152 1550 22000	162 1650 23400	118 1200 17100	132 1350 19200	152 1550 22000	162 1650 23400	132 1350 19200	127 1300 18400	84 860 12200
Flexural Modulus	ASTM D790	---	MPa kgf/cm <sup>2</sup> lbf/in <sup>2</sup>	3530 36000 512000	4410 45000 639000	5690 58000 824000	7550 77000 1090000	3530 36000 512000	4410 45000 639000	5690 58000 824000	7550 77000 1090000	5390 55000 782000	4900 50000 708600	2100 21500 306000
Rockwell Hardness	R scale	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>Thermal Properties</b>														
Flammability	UL-94	---	---	V-0 (3.0mm)	V-0 (3.0mm)	V-0 (3.0mm)	V-0 (3.0mm)	V-0 (1.7mm)	V-0 (1.7mm)	V-0 (1.7mm)	V-0 (1.7mm)	(Equiv. V-0) (1.7mm)	(Equiv. V-0) (1.7mm)	(Equiv. V-2) (1.6mm)
Heat Deflection Temperature	ASTM D648	---	°C	140	143	145	146	140	143	145	146	145	145	132
			°F	284	289	293	294	284	289	293	294	293	293	269
Melt Flow Rate	ASTM D1238	300°C 1.2 kgf	g/10 min.	---	---	---	---	---	---	---	---	---	---	---
<b>Optical Properties</b>														
Light Transmittance	ASTM D1003	3.0mm	%	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent	Translucent
Light Refractive Index	ASTM D542	---	---	---	---	---	---	---	---	---	---	---	---	---
Haze	ASTM D1003	3.0mm	%	---	---	---	---	---	---	---	---	---	---	---
<b>Physical Properties</b>														
Specific Gravity	ASTM D792	---	---	1.27	1.30	1.35	1.43	1.27	1.30	1.35	1.43	1.41	1.57	1.22
Water Absorption	ASTM D570	24 hrs @23°C Water immersion	%	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Mould Shrinkage	ASTM D995	Parallel	%	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.4	0.2 ~ 0.4	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.4	0.2 ~ 0.4	0.3 ~ 0.4	0.3 ~ 0.4	0.5 ~ 0.7
		Across		0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5	0.3 ~ 0.5
<b>Electrical Properties</b>														
Dielectric Breakdown Strength	ASTM D149	---	kV/mm	20	20	20	20	20	20	20	20	20	20	20
Dielectric Constant	ASTM D150	10 <sup>6</sup> Hz	---	2.9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.9
Dielectric Dissipation Factor	ASTM D150	10 <sup>6</sup> Hz	---	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
Arc Resistance	ASTM D495	---	sec.	110	110	110	110	110	110	110	110	110	110	110
Volume Resistivity	ASTM D257	---	Ω·cm	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16	1.0E16

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