

## Polycarbonate Data Sheet

### Product Qualities

- Hi Impact Resistance
- Excellent clarity
- Flame resistance
- Light weight
- Weathering stability
- Ease of fabrication

### Properties

- Glass transition temperature: 145oC.
- Melting temperature: 225oC.
- Amorphous density at 25oC: 1.20 g/cm<sup>3</sup>.
- Molecular weight of repeat unit: 254.3 g/mol.

<b>Physical Properties</b>		<i>Average</i>	<i>Grade Count</i>
Density	1.17 - 1.45 g/cc 0.0423 - 0.0524 lb/in <sup>3</sup>	1.2 g/cc	88
Water Absorption	0.09 - 0.35 %	0.17%	67
Moisture Absorption at Equilibrium	0.15 - 0.35 %	0.27%	13
Water Absorption at Saturation	0.35 %		7
Linear Mold Shrinkage	0.003 - 0.0075 cm/cm / 0.003 - 0.0075 in/in	0.0061 cm/cm	72
Melt Flow	2 - 71 g/10 min	14.2 g/10 min	76
<b>Mechanical Properties</b>		<i>Average</i>	<i>Grade Count</i>
Hardness	Rockwell M 65 - 76	70.9	14
Hardness	Rockwell R 118 - 122	120	19
Tensile Strength	Ultimate 54 - 72 MPa / 7830 - 10400 psi	64 MPa	71
Tensile Strength	Yield 58.6 - 70 MPa / 8500 - 10200 psi	62 MPa	27
Elongation	at Break 8 - 135 %	97.9%	79
Elongation	at Yield 6 - 8 %	6.1%	15
Tensile Modulus	1.6 - 2.4 GPa / 232 - 348 ksi	2.3 GPa	25
Flexural Modulus	1.8 - 4.134 GPa / 261 - 600 ksi	2.3 GPa	84

Flexural Yield Strength	75 - 110 MPa / 10900 - 16000 psi	91.8 MPa	75
Compressive Yield Strength	18 - 86 MPa / 2610 - 12500 psi	69.7 MPa	6
Izod Impact	Notched 0.5 - 9.77 J/cm / 0.937 - 18.3 ft-lb/in	7.2 J/cm	80
Izod Impact	Untouched 16 - 21.4 J/cm / 30 - 40.1 ft-lb/in	19.5 J/cm	5
Izod Impact	Notched Low Temp 6.4 J/cm / 12 ft-lb/in		1
Charpy Impact	Unnotched NB / Grade		5
Charpy Impact	Notched 0.9 J/cm <sup>2</sup> / 4.28 ft-lb/in <sup>2</sup>		1
Tensile Impact	Strength 580 kJ/m <sup>2</sup> / 276 ft-lb/in <sup>2</sup>		3
Tensile Creep Modulus	1 hour 2200 MPa / 319000 psi		3
Tensile Creep Modulus	1000 hours 17 - 1900 MPa / 2470 - 276000 psi	1400 MPa	4

### Electrical Properties

*Average*

*Grade Count*

Electrical Resistivity	1e+015 - 2e+017 ohm-cm / 1e+015 - 2e+017 ohm-cm	7E+16 ohm-cm	37
Surface Resistance	1e+015 ohm / 1e+015 ohm		7
Dielectric Constant	2.9 - 3 / 2.9 - 3	3	32
Dielectric Constant	Low Frequency 3 - 3.17	3.1	29
Dielectric Strength	15 - 30 kV/mm / 381 - 762 kV/in	26.4 kV/mm	9
Dissipation Factor	0.0007 - 0.01	0.00966	33
Dissipation Factor	Low Frequency 0.0007 - 0.001	0.000906	32
Arc Resistance	60 - 120 sec / 60 - 120 sec	110 sec	4
Comparative Tracking Index	275 - 600 V	370 V	5
Hot Wire Ignition	HWI 30 sec / 30 sec		2
High Amp Arc Ignition	HAI 120 arcs / 120 arcs		2
High Voltage Arc-Tracking Rate	HVTR 10 mm/min / 0.394 in/min		2

### Thermal Properties

*Average*

*Grade Count*

CTE	linear 20° C 32 - 120 μm/m-° C / 17.8 - 66.7 μin/in-° F	70.2 μm/m-° C	48
CTE	linear 20° C Transverse to Flow 70 μm/m-° C / 38.9 μin/in-° F		4
CTE	linear 100° C 65 μm/m-° C / 36.1 μin/in-° F		1
Heat Capacity	1 - 1.2 J/g-° C / 0.239 - 0.287 BTU/lb-°	1.2 J/g-K	4

	F		
Thermal Conductivity	0.19 - 0.21 W/m-K / 1.32 - 1.46 BTU-in/hr-ft <sup>2</sup> -° F	0.2 W/m-K	6
Maximum Service Temperature	Air 95 - 154° C / 203 - 309° F	130° C	90
Deflection Temperature at 0.46 MPa (66 psi)	115 - 143° C / 239 - 289° F	130° C	72
Deflection Temperature at 1.8 MPa (264 psi)	95 - 154° C / 203 - 309° F	130° C	90
Vicat Softening Point	126 - 157° C / 259 - 315° F	150° C	32
Minimum Service Temperature	Air -60° C / -76° F		1
Glass Temperature	143 - 150° C / 289 - 302° F	150° C	5
ULRTI Electrical	75 - 130° C / 167 - 266° F	110° C	28
ULRTI Mechanical with Impact	75 - 130° C / 167 - 266° F	110° C	28
ULRTI Mechanical without Impact	75 - 130° C / 167 - 266° F	110° C	28
Flammability	UL94 HB		47
Oxygen Index	25 - 26 %	25.9%	7

### Optical Properties

*Average*      *Grade Count*

Refractive Index	1.583 - 1.586 / 1.583 - 1.586	1.59	8
Haze	1 - 1.1 %	1%	4
Transmission	Visible 87 - 89 %	87.9%	10

### Electrical Properties

*Average*      *Grade Count*

Processing Temperature	260 - 332° C / 500 - 630° F	300° C	57
Rear Barrel Temperature	255 - 266° C / 491 - 511° F	260° C	12
Middle Barrel Temperature	266 - 274° C / 511 - 525° F	270° C	12
Front Barrel Temperature	277 - 291° C / 531 - 556° F	280° C	12
Nozzle Temperature	277 - 288° C / 531 - 550° F	280° C	12
Mold Temperature	65 - 100° C / 149 - 212° F	83° C	54
Drying Temperature	107 - 121° C		

Rostra Vernatherm  
 106 Enterprise Drive, Bristol CT 06010  
 P: 860-582-6776 F: 860-582-0298  
 W: [www.vernatherm.com](http://www.vernatherm.com)