

## SABIC Innovative Plastics Lexan® VR2020 PC

Category : Polymer , Thermoplastic , Polycarbonate (PC)

### Material Notes:

UL rated HB as of 10/97. 200 series recommended when V-2 rating required. Nonhalogenated. 17.5 MFR, for small, intricate parts. UV stabilized. Internal mold release. This data was supplied by SABIC-IP for the Americas region.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_SABIC-Innovative-Plastics-Lexan-VR2020-PC.php](http://www.lookpolymers.com/polymer_SABIC-Innovative-Plastics-Lexan-VR2020-PC.php)

Physical Properties	Metric	English	Comments
Specific Gravity	1.20 g/cc	1.20 g/cc	ASTM D 792
Density	1.19 g/cc	0.0430 lb/in <sup>3</sup>	ASTM D 792
	1.20 g/cc	0.0434 lb/in <sup>3</sup>	ISO 1183
Water Absorption	0.15 % @Time 86400 sec	0.15 % @Time 24.0 hour	ASTM D 570
Moisture Absorption at Equilibrium	0.15 %	0.15 %	23°C / 50% RH; ISO 62
	0.35 % @Temperature 23.0 °C	0.35 % @Temperature 73.4 °F	ASTM D 570
	0.58 % @Temperature 100 °C	0.58 % @Temperature 212 °F	ASTM D 570
Water Absorption at Saturation	0.35 % @Temperature 23.0 °C	0.35 % @Temperature 73.4 °F	ISO 62
Linear Mold Shrinkage, Flow	0.0050 - 0.0070 cm/cm @Thickness 3.20 mm	0.0050 - 0.0070 in/in @Thickness 0.126 in	SABIC Method
Melt Flow	17.5 g/10 min @Load 1.20 kg, Temperature 300 °C	17.5 g/10 min @Load 2.65 lb, Temperature 572 °F	ASTM D 1238
	21 g/10 min @Load 5.00 kg, Temperature 220 °C	21 g/10 min @Load 11.0 lb, Temperature 428 °F	[cm <sup>3</sup> /10 min] Melt Volume Rate; ISO 1133

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	70	70	ASTM D 785
Hardness, Rockwell R	118	118	ASTM D 785

Tensile Strength at Break Mechanical Properties	65.0 MPa Metric	9430 psi English	Type I, 50 mm/min; ASTM D 638 Comments
	65.0 MPa	9430 psi	50 mm/min; ISO 527
Tensile Strength, Yield	62.0 MPa	8990 psi	Type I, 50 mm/min; ASTM D 638
	63.0 MPa	9140 psi	50 mm/min; ISO 527
Elongation at Break	100 %	100 %	50 mm/min; ISO 527
	110 %	110 %	Type I, 50 mm/min; ASTM D 638
Elongation at Yield	6.0 %	6.0 %	50 mm/min; ISO 527
	7.0 %	7.0 %	Type I, 50 mm/min; ASTM D 638
Tensile Modulus	2.35 GPa	341 ksi	1 mm/min; ISO 527
	2.38 GPa	345 ksi	5 mm/min; ASTM D 638
Flexural Yield Strength	90.0 MPa	13100 psi	2 mm/min; ISO 178
	93.0 MPa	13500 psi	1.3 mm/min, 50 mm span; ASTM D 790
Flexural Modulus	2.30 GPa	334 ksi	2 mm/min; ISO 178
	2.34 GPa	339 ksi	1.3 mm/min, 50 mm span; ASTM D 790
Izod Impact, Notched	6.94 J/cm @Temperature 23.0 °C	13.0 ft-lb/in @Temperature 73.4 °F	ASTM D 256
Izod Impact, Unnotched	32.04 J/cm @Temperature 23.0 °C	60.02 ft-lb/in @Temperature 73.4 °F	ASTM D 4812
Izod Impact, Notched (ISO)	10.0 kJ/m <sup>2</sup> @Temperature -30.0 °C	4.76 ft-lb/in <sup>2</sup> @Temperature -22.0 °F	80*10*4; ISO 180/1A
	12.0 kJ/m <sup>2</sup> @Temperature 23.0 °C	5.71 ft-lb/in <sup>2</sup> @Temperature 73.4 °F	80*10*4; ISO 180/1A
Charpy Impact Unnotched	NB @Temperature 23.0 °C	NB @Temperature 73.4 °F	Edgew 80*10*4 sp=62mm; ISO 179/1eU
Tensile Impact Strength	546 kJ/m <sup>2</sup>	260 ft-lb/in <sup>2</sup>	Type S; ASTM D 1822
Dart Drop, Total Energy	169 J @Temperature 23.0 °C	125 ft-lb @Temperature 73.4 °F	ASTM D 3029
Taber Abrasion, mg/1000 Cycles	10 @Load 1.00 kg	10 @Load 2.20 lb	CS-17; ASTM D 1044

Mechanical Properties	Metric	English	Comments
Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	68.4 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	38.0 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ASTM E 831
	@Temperature -40.0 - 95.0 $^\circ\text{C}$	@Temperature -40.0 - 203 $^\circ\text{F}$	
	70.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	38.9 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ISO 11359-2
	@Temperature 23.0 - 80.0 $^\circ\text{C}$	@Temperature 73.4 - 176 $^\circ\text{F}$	
CTE, linear, Transverse to Flow	70.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	38.9 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ISO 11359-2
	@Temperature 23.0 - 80.0 $^\circ\text{C}$	@Temperature 73.4 - 176 $^\circ\text{F}$	
Specific Heat Capacity	1.25 J/g- $^\circ\text{C}$	0.299 BTU/lb- $^\circ\text{F}$	ASTM C 351
Thermal Conductivity	0.190 W/m-K	1.32 BTU-in/hr-ft $^2$ - $^\circ\text{F}$	ASTM C 177
Hot Ball Pressure Test	$\leq 140$ $^\circ\text{C}$	$\leq 284$ $^\circ\text{F}$	IEC 60695-10-2
Deflection Temperature at 0.46 MPa (66 psi)	137 $^\circ\text{C}$	279 $^\circ\text{F}$	unannealed; ASTM D 648
	@Thickness 6.40 mm	@Thickness 0.252 in	
Deflection Temperature at 1.8 MPa (264 psi)	122 $^\circ\text{C}$	252 $^\circ\text{F}$	Edgew 120*10*4 sp=100mm; ISO 75/Ae
	132 $^\circ\text{C}$	270 $^\circ\text{F}$	
	@Thickness 6.40 mm	@Thickness 0.252 in	unannealed; ASTM D 648
Vicat Softening Point	140 $^\circ\text{C}$	284 $^\circ\text{F}$	Rate B/50; ISO 306
	141 $^\circ\text{C}$	286 $^\circ\text{F}$	Rate B/120; ISO 306
	154 $^\circ\text{C}$	309 $^\circ\text{F}$	Rate B/50; ASTM D 1525
UL RTI, Electrical	100 $^\circ\text{C}$	212 $^\circ\text{F}$	UL 746B
UL RTI, Mechanical with Impact	100 $^\circ\text{C}$	212 $^\circ\text{F}$	UL 746B
UL RTI, Mechanical without Impact	100 $^\circ\text{C}$	212 $^\circ\text{F}$	UL 746B
Flammability, UL94	HB	HB	UL 94
	@Thickness 0.760 mm	@Thickness 0.0299 in	
Optical Properties	Metric	English	Comments
Refractive Index	1.586	1.586	ASTM D 542
Haze	1.0 %	1.0 %	ASTM D 1003
	@Thickness 2.54 mm	@Thickness 0.100 in	

Optical Properties	Metric	English	Comments
Transmission, Visible	@Thickness 2.54 mm	@Thickness 0.100 in	ASTM D 1003

Electrical Properties	Metric	English	Comments
Volume Resistivity	>= 1.00e+17 ohm-cm	>= 1.00e+17 ohm-cm	ASTM D 257
Dielectric Constant	2.96	2.96	ASTM D 150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Dielectric Strength	3.17	3.17	ASTM D 150
	@Frequency 50.0 - 60.0 Hz	@Frequency 50.0 - 60.0 Hz	
Dielectric Strength	14.9 kV/mm	378 kV/in	in air; ASTM D 149
	@Thickness 3.20 mm	@Thickness 0.126 in	
Dissipation Factor	0.00090	0.00090	ASTM D 150
	@Frequency 50.0 - 60.0 Hz	@Frequency 50.0 - 60.0 Hz	
Dissipation Factor	0.010	0.010	ASTM D 150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Comparative Tracking Index	250 - 400 V	250 - 400 V	PLC code 2; UL 746A
Hot Wire Ignition, HWI	7.0 - 15 sec	7.0 - 15 sec	PLC code 4; UL 746A
High Amp Arc Ignition, HAI	60 - 120 arcs	60 - 120 arcs	surface, PLC code 1; UL 746A
High Voltage Arc-Tracking Rate, HVTR	25.4 - 80.0 mm/min	1.00 - 3.15 in/min	PLC code 2; UL 746A

Descriptive Properties	Value	Comments
Ball Pressure Test, 125°C +/- 2°C	PASSES	IEC 60695-10-2
UV-light, water exposure/immersion	F1	UL 746C

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