

# PR 25

PR 25 is a rapid production material that has excellent resolution, prints quickly, and is able to withstand moderate functional testing.

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**NOTES**—Test specimens were prepared using Carbon M1 printer and a Type B cassette. Print parameters were generated using software v.0.42.0. Tensile data were generated using printed Type V samples (per ASTM D638). All other test specimens were printed following standard ASTM test geometries. All test specimens were printed, cleaned, and post-processed per instructions provided in the Carbon User Manual. Samples designated as UV-cured were cured for 30 seconds per side using a Dymax 5000-EC (225 mW/cm<sup>2</sup>). Liquid property measurements were carried out using fully mixed resins. Results provided herein are representative of these processes and may vary if these established protocols are not followed.

**Tensile Properties—ASTM D638**

	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Ultimate Tensile Strength	26 - 32 MPa	3770 - 4600 psi	42 - 50 MPa	6000 - 7200 psi
Tensile Strength at Yield	26 - 32 MPa	3770 - 4600 psi	42 - 50 MPa	6000 - 7200 psi
Modulus	600 - 950 MPa	87 - 138 ksi	1400 - 1500 MPa	203 - 218 ksi
Elongation-at-Break	15 - 28 %	15 - 28 %	3 - 5%	3 - 5%

**Flexural Properties —ASTM D790**

	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Flexural Strength	35 - 45 MPa	5000 - 6500 psi	75 - 85 MPa	11- 12 ksi
Flexural Modulus	1100 - 1300 MPa	160 - 190 ksi	2000 - 2500 MPa	290 - 360 ksi

**Impact Properties—ASTM D256, ASTM D4812**

IMPACT STRENGTH	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Machined Izod notch	24 - 28 J/m	0.45 - 0.52 ft-lb/in.	18 - 21 J/m	0.33 - 0.40 ft-lb/in.
Izod Unnotched	380 - 420 J/m	7.1 - 7.9 ft-lb/in.	150 - 190 J/m	2.8 - 3.5 ft-lb/in.

IMPACT ENERGY	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Machined Izod notch	2.3 - 2.7 kJ/m <sup>2</sup>	0.21 - 0.25 ft-lb/in <sup>2</sup>	1.7 - 2.0 kJ/m <sup>2</sup>	0.16 - 0.19 ft-lb/in <sup>2</sup>
Izod Unnotched	37 - 41 kJ/m <sup>2</sup>	3.4 - 3.8 ft-lb/in <sup>2</sup>	15 - 19 kJ/m <sup>2</sup>	1.3 - 1.7 ft-lb/in <sup>2</sup>

# Carbon Resin

PR 25—VERSION 1

TECHNICAL DATA SHEET 4/3/16 V3.2

## Thermal Properties

	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Heat Deflection Temperature @ 0.45 MPa/66 psi (ASTM D648)	52 °C	125 °F	61 °C	142 °F
Heat Deflection Temperature @ 1.82 MPa/264 psi (ASTM D648)	41 °C	105 °F	45 °C	113 °F
T <sub>g</sub> (DMA, E')	47 °C	116 °F	47 °C	116 °F
T <sub>g</sub> (DMA, tan(d))	90 °C	194 °F	90 °C	194 °F
Coefficient of Thermal Expansion (ASTM E228)	133 - 141 ppm/°C			

## Liquid Properties

Viscosity (@25°C, cP)	1600 - 1800
Liquid Density (g/mL, @25°C)	1.10 - 1.12