

PR 25

VERSION 1

PR 25 is a rapid production material that is used to both quickly iterate through engineering designs and produce parts with remarkable detail.

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/cm²). 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)

	GREEN		UV-CURED	
	METRIC	IMPERIAL	METRIC	IMPERIAL
IMPACT STRENGTH				
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.
Printed Izod notch	35 - 45 J/m	0.65 - 0.84 ft-lb/in.	11 - 15 J/m	0.20 - 0.28 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				
Machined Izod notch	2.3 - 2.7 kJ/m ²	0.21 - 0.25 ft-lb/in ²	1.7 - 2.0 kJ/m ²	0.16 - 0.19 ft-lb/in ²
Printed Izod notch	3.3 - 4.4 kJ/m ²	0.31 - 0.40 ft-lb/in ²	1.1 - 1.5 kJ/m ²	0.10 - 0.13 ft-lb/in ²
Izod Unnotched	37 - 41 kJ/m ²	3.4 - 3.8 ft-lb/in ²	15 - 19 kJ/m ²	1.3 - 1.7 ft-lb/in 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 _g (DMA, E')	47°C	116°F	47°C	116°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