Durable

Photopolymer Resin

FLDUCL01 MATERIAL PROPERTIES

Prepared: 01/27/2017

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Durable was designed to simulate polypropylene (PP) plastic, with comparable low modulus and high-impact strength. Use this wear-resistant, ductile material when parts require deformation and a smooth, glossy finish. For best mechanical properties, we recommend post-curing prints.

	METRIC[1]		IMPERIAL[1]		METHOD
	Green[2]	**Post-Cured[3]**	**Green[2]**	**Post-Cured[3]**	
Tensile Properties					
Tensile Strength at Yield	18.6 MPa	31.8 MPa	2.7 ksi	4.61 ksi	ASTM D 638-10
Tensile Modulus	0.45 GPa	1.26 GPa	65.7 ksi	183 ksi	ASTM D 638-10
Elongation	67 %	49 %	67 %	49 %	ASTM D 638-10
Flexural Properties					
Flexural Stress at 5% Strain	4.06 MPa	27.2 MPa	0.59 ksi	3.95 ksi	ASTM D 790-10, Procedure A
Flexural Modulus	0.16 GPa	0.82 GPa	23.4 ksi	119 ksi	ASTM D 790-10, Procedure A
Impact Properties					
IZOD Impact Strength	130.8 J/m	109 J/m	2.46 ft-lbf/in	2.05 ft-lbf/in	ASTM D 256-10, Test Method A
Temperature Properties					
Heat Deflection Temp. @ 0.45 MPa	< 30 °C	43.3 °C	< 86 °F	110 °F	ASTM D 648-07, Method B
Thermal Expansion from 23 to 50°C	117.0 µm/m/°C	145.1 µm/m/°C	65.0 µin/in/°F	80.6 µin/in/°F	ASTM E831-14

NOTES:

[1] Material properties can vary with part geometry, print orientation, print settings, and temperature.

[2] Data was obtained from green parts, printed using 100 µm layer, Durable settings, without additional treatments.

[3] Data refers to post-cured properties obtained after exposing green parts with 2.5 mW/cm^2 of 405 nm LED light for 120 minutes at 60°C.

SOLVENT COMPATIBILITY

Weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Mechanical Properties	24 HR WEIGHT GAIN (%)
Acetic Acid, 5 %	1.3
Acetone	sample cracked
Isopropyl Alcohol	5.1
Bleach, ~5 % NaOCl	< 1
Butyl Acetate	7.9
Diesel Fuel	< 1
Diethyl glycol monomethyl ether	7.8
Hydraulic Oil	< 1
Skydrol 5	1.3
Hydrogen Peroxide (3 %)	1
Isooctane	< 1
Mineral Oil, light	< 1
Mineral Oil, heavy	< 1
Salt Water (3.5 % NaCl)	< 1
Sodium hydroxide (0.025 %, pH = 10)	< 1
Water	< 1
Xylene	6.5
Strong Acid (HCI conc)	sample distorted