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# Durable

Photopolymer Resin for Form 2

## FLDUCL01 MATERIAL PROPERTIES

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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** | | | | | |
| Ultimate Tensile Strength | 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 Form 2, 100 µm, Durable settings, without additional treatments.

[3] Data was obtained from parts printed using Form 2, 100 µm, Durable settings and post-cured with 2.5 mW/cm$^2$ of 405 nm LED light for 120 minutes at 60°C.

## SOLVENT COMPATIBILITY

Percent 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 | < 1 |
| Diethyl glycol monomethyl ether | 7.8 |
| Hydrolic 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 (HCl Conc) | distorted |