

Durable

Durable Resin for Pliable Prototyping

Durable Resin is the most pliable, impact resistant, and lubricious material in our functional family of Tough and Durable Resins. Choose Durable Resin for squeezable parts and low-friction assemblies.

Squeezable prototypes

Low friction and non-degrading surfaces

Impact resistant jigs

Polyethylene-like strength and stiffness



FLDUCL02

formlabs 

Durable Material Properties Data

| | METRIC ¹ | | IMPERIAL ¹ | | METHOD |
|----------------------------------|---------------------|-------------------------|-----------------------|-------------------------|-------------------------------------|
| | Green ² | Post-Cured ³ | Green ² | Post-Cured ³ | |
| Tensile Properties | | | | | |
| Ultimate Tensile Strength | 13 MPa | 28 MPa | 1900 psi | 3980 psi | ASTM D 638-14 |
| Tensile Modulus | 0.24 GPa | 1.0 GPa | 34 ksi | 149 ksi | ASTM D 638-14 |
| Elongation at Break | 75 % | 55 % | 75 % | 55 % | ASTM D 638-14 |
| Flexural Properties | | | | | |
| Flexural Stress at 5% Strain | 1.0 MPa | 24 MPa | 149 psi | 3420 psi | ASTM D 790-17, Procedure A |
| Flexural Modulus | 0.04 GPa | 0.66 GPa | 5.58 ksi | 94.1 ksi | ASTM D 790-17, Procedure A |
| Impact Properties | | | | | |
| Notched IZOD | 127 J/m | 114 J/m | 2.37 ft-lbf/in | 2.13 ft-lbf/in | ASTM D 256-10 (2018), Test Method A |
| Unnotched IZOD | 972 J/m | 710 J/m | 18.2 ft-lbf/in | 13.3 ft-lbf/in | ASTM D4812-11 |
| Temperature Properties | | | | | |
| Heat Deflection Temp. @ 0.45 MPa | < 30 °C | 41 °C | < 86 °F | 105 °F | ASTM D 648-18, Method B |
| Thermal Expansion | 124 µm/m/°C | 106 µm/m/°C | 69.1 µin/in/°F | 59 µin/in/°F | ASTM E831-14 |

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

²Data was obtained from green parts, printed using Form 2, 100 µm without additional treatments.

³Data was obtained from parts printed using Form 2, 100 µm and post-cured with a Formcure 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 Hour Weight Gain (%) | Mechanical Properties | 24 Hour Weight Gain (%) |
|---------------------------------|-------------------------|-------------------------------------|-------------------------|
| Acetic Acid, 5 % | 1.3 | Hydrogen Peroxide (3 %) | 1 |
| Acetone | sample cracked | Isooctane | < 1 |
| Isopropyl Alcohol | 5.1 | Mineral Oil, light | < 1 |
| Bleach, ~5 % NaOCl | < 1 | Mineral Oil, heavy | < 1 |
| Butyl Acetate | 7.9 | Salt Water (3.5 % NaCl) | < 1 |
| Diesel | < 1 | Sodium hydroxide (0.025 %, pH = 10) | < 1 |
| Diethyl glycol monomethyl ether | 7.8 | Water | < 1 |
| Hydraulic Oil | < 1 | Xylene | 6.5 |
| Skydrol 5 | 1.3 | Strong Acid (HCl Conc) | distorted |