

# Flexible 80A

## Flexible 80A Resin for Hard Flexible Prototypes

Flexible 80A Resin is the most stiff soft-touch material in our library of Flexible and Elastic Resins, with an 80A Shore durometer to simulate the flexibility of rubber or TPU.

Balancing softness with strength, Flexible 80A Resin can withstand bending, flexing, and compression, even through repeated cycles. This material is well-suited for cushioning, damping, and shock absorption.

Handles, grips, overmolds

Cartilage and ligament anatomy

Seals, gaskets, masks



ORDER A FREE  
SAMPLE PART →



FLFL8001

# Flexible 80A Resin Material Properties Data

|  | METRIC <sup>1</sup> |                         | IMPERIAL <sup>1</sup> |                         | METHOD  |
|--|---------------------|-------------------------|-----------------------|-------------------------|---|
|  | Green               | Post-Cured <sup>2</sup> | Green                 | Post-Cured <sup>2</sup> |   |
| <b>Mechanical Properties</b>           |                     |                         |                       |                         |   |
| Ultimate Tensile Strength <sup>3</sup> | 3.7 MPa             | 8.9 MPa                 | 539 psi               | 1290 psi                | ASTM D 412-06 (A)                                     |
| Stress at 50% Elongation               | 1.5 MPa             | 3.1 MPa                 | 218 psi               | 433 psi                 | ASTM D 412-06 (A)                                     |
| Stress at 100% Elongation              | 3.5 MPa             | 6.3 MPa                 | 510 psi               | 909 psi                 | ASTM D 412-06 (A)                                     |
| Elongation at Break                    | 100%                | 120%                    | 100%                  | 120%                    | ASTM D 412-06 (A)                                     |
| Shore Hardness                         | 70A                 | 80 A                    | 70A                   | 80 A                    | ASTM 2240   |
| Compression Set (23 °C for 22 hours)   | Not Tested          | 3%                      | Not Tested            | 3%                      | ASTM D 624-00   |
| Compression Set (70 °C for 22 hours)   | Not Tested          | 5%                      | Not Tested            | 5%                      | ASTM D 395-03 (B)                                     |
| Tear Strength <sup>4</sup>             | 11 kN/m             | 24 kN/m                 | 61 lbf/in             | 137 lbf/in              | ASTM D 395-03 (B)                                     |
| Ross Flex Fatigue at 23 °C             | Not Tested          | >200,000 cycles         | Not Tested            | >200,000 cycles         | ASTM D1052, (notched), 60° bending, 100 cycles/minute |
| Ross Flex Fatigue at -10 °C            | Not Tested          | >50,000 cycles          | Not Tested            | >50,000 cycles          | ASTM D1052, (notched), 60° bending, 100 cycles/minute |
| Bayshore Resilience                    | Not Tested          | 28%                     | Not Tested            | 28%                     | ASTM D2632  |
| <b>Thermal Properties</b>              |                     |                         |                       |                         |   |
| Glass transition temperature (Tg)      | Not Tested          | 27 °C                   | Not Tested            | 27 °C                   | DMA   |

<sup>1</sup>Material properties can vary with part geometry, print orientation, print settings and temperature.

<sup>2</sup>Data was obtained from parts printed using Form 3, 100 µm, Flexible 80A settings, washed in Form Wash for 10 minutes and postcured with Form Cure at 60 °C for 10 minutes.

<sup>3</sup>Tensile testing was performed after 3+ hours at 23 °C, using a Die C specimen cut from sheets.

<sup>4</sup>Tear testing was performed after 3+ hours at 23 °C, using a Die C tear specimen directly printed.

## 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:

| Solvent                          | 24 Hour Weight Gain (%) | Solvent                             | 24 Hour Weight Gain (%) |
|----------------------------------|-------------------------|-------------------------------------|-------------------------|
| Acetic Acid, 5 %                 | 0.9                     | Hydrogen Peroxide (3 %)             | 0.7                     |
| Acetone                          | 37.4                    | Isooctane (aka gasoline)            | 1.6                     |
| Isopropyl Alcohol                | 11.7                    | Mineral Oil, light                  | 0.1                     |
| Bleach, ~5 % NaOCl               | 0.6                     | Mineral Oil, heavy                  | <0.1                    |
| Butyl Acetate                    | 51.4                    | Salt Water (3.5 % NaCl)             | 0.5                     |
| Diesel                           | 2.3                     | Sodium hydroxide (0.025 %, pH = 10) | 0.6                     |
| Diethyl glycol monomethyl ether  | 19.3                    | Water                               | 0.7                     |
| Hydraulic Oil                    | 1.0                     | Xylene                              | 64.1                    |
| Skydrol 5                        | 10.7                    | Strong Acid (HCl Conc)              | 28.6                    |
| Tripropylene Glycol Methyl Ether | 13.6                    |                                     |                         |