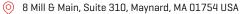


TOUGH Resin

TOUGH is a rigid, robust engineering material with a good combination of strength and elongation. TOUGH can be used to produce functional end-use parts.



| | | Cured Parts | Standard |
|---------------------|--------------------------------|---|----------------|
| Tensile Properties | TENSILE STRENGTH | 82.9 MPa | ASTM D638 |
| | ELASTIC MODULUS | 2566 MPa | ASTM D638 |
| | ELONGATION AT BREAK | 14% | ASTM D638 |
| Flexural Properties | FLEXURAL STRENGTH | 122.4 MPa | ASTM D790 |
| | FLEXURAL MODULUS | 4 GPa | ASTM D790 |
| Thermal Properties | HDT @ 0.45 MPa | 78 °C | ASTM D648 - 07 |
| | CTE @ 60C | 118 μm/m/°C | - |
| General Properties | CONTACT ANGLE | 30-50° | ASTM D7334 |
| | WATER ABSORPTION (24h) | 1.28% | ASTM D570 |
| | DIELECTIC CONSTANT (10 GHz) | 2.88 | - |
| | DF | 0.033 | - |
| | HARDNESS | 74.5 Shore D | ASTM D785 |
| | VISCOSITY | 180 cP | - |
| | STANDARD COLOR | Yellow trans | - |
| | COMPATIBLE BMF SYSTEMS | P130, S130, P140, S140, P150, S230, S240 | - |









¹Final properties are dependent on print conditions, post-processing operations, and part

² Test samples were UV cured and heat cured.