

Clear Resin V4.1

An optimally-balanced Clear Resin for transparent applications

Clear Resin is a rigid material that polishes to near optical transparency. It is ideal for working with light or showcasing internal features, printing see-through models and devices. Use Clear Resin to create clear prototype parts, LED housings, windows, fluidics, molds, optics, lighting, and any parts requiring translucency.

Clear Resin V4.1 is compatible with Form 3 Series printers. Clear Resin V4.1 creates more color-neutral and transparent parts compared to Clear Resin V4 (Legacy)

Transparent enclosures,
optical components,
and lighting prototypes

Parts showcasing
internal features

Molds, masters,
and other rapid
tooling

Fluidic devices



FLGPCL41

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To the best of our knowledge the information contained herein is accurate. However, Formlabs, Inc. makes no warranty, expressed or implied, regarding the accuracy of these results to be obtained from the use thereof.

| Mechanical Properties | METRIC | | IMPERIAL | | METHOD |
|---------------------------|----------|---------------------------|----------|---------------------------|---------------|
| | GREEN | POST-CURED 15MIN @ 60C | GREEN | POST-CURED 15MIN @ 60C | |
| Ultimate Tensile Strength | 37 MPa | 53 MPa | 5366 psi | 7687 psi | ASTM D 638-14 |
| Tensile Modulus | 1697 MPa | 2369 MPa | 246 ksi | 344 ksi | ASTM D 638-14 |
| Elongation at Break (X/Y) | 19% | 9% | 19% | 9% | ASTM D 638-14 |

| Flexural Properties | METRIC | | IMPERIAL | | METHOD |
|---------------------|----------|---------------------------|----------|---------------------------|---------------|
| | GREEN | POST-CURED 15MIN @ 60C | GREEN | POST-CURED 15MIN @ 60C | |
| Flexural Strength | 62 MPa | 103 MPa | 8992 psi | 14939 psi | ASTM D 790-15 |
| Flexural Modulus | 1520 MPa | 2710 MPa | 220 ksi | 393 ksi | ASTM D 790-15 |

| Impact Properties | METRIC | | IMPERIAL | | METHOD |
|-------------------|--------|---------------------------|--------------------|---------------------------|---------------|
| | GREEN | POST-CURED 15MIN @ 60C | GREEN | POST-CURED 15MIN @ 60C | |
| Notched Izod | 29 J/m | 27 J/m | 0.551 ft-lbs/in | 0.511 ft-lbs/in | ASTM D 256-10 |

| Thermal Properties | METRIC | | IMPERIAL | | METHOD |
|----------------------------------|--------|---------------------------|----------|---------------------------|---------------|
| | GREEN | POST-CURED 15MIN @ 60C | GREEN | POST-CURED 15MIN @ 60C | |
| Heat Deflection Temp. @ 1.8 MPa | 56 °C | 65 °C | 133 °C | 149 °C | ASTM D 648-16 |
| Heat Deflection Temp. @ 0.45 MPa | 49 °C | 55 °C | 120 °C | 131 °C | ASTM D 648-16 |

| Transmission | POST-CURED 15 MIN @ 60 °C | ASTM STANDARD |
|--------------------|---------------------------|----------------|
| Transmission @ 2mm | 85 % | ASTM D 1003-21 |
| a* @ 2mm | -4.31 | ASTM E 1348-15 |
| b* @ 2mm | 5.58 | ASTM E 1348-15 |

| Transmission | POST-CURED 15 MIN @ 60 °C | ASTM STANDARD |
|---------------------|---------------------------|----------------|
| Transmission @ 10mm | 59 % | ASTM D 1003-21 |
| a* @ 10mm | -3.98 | ASTM E 1348-15 |
| b* @ 10mm | 5.94 | ASTM E 1348-15 |

TRANSMISSION REFERS TO THE AMOUNT OF VISIBLE LIGHT THAT PASSES THROUGH THE PART

a* and b* are more commonly associated with the CIELAB color space, where they denote axes for color measurement:

a* axis: Ranges from green to red, with negative values indicating green and positive values indicating red.

b* axis: Ranges from blue to yellow, with negative values indicating blue and positive values indicating yellow.

SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed 1 x 1 x 1 cm cube immersed in respective solvent:

| Solvent | 24 hr weight gain (%) | Solvent | 24 hr weight gain (%) |
|---------------------------------|-----------------------|--|-----------------------|
| Acetic Acid 5% | 0.5 | Mineral oil, heavy | 0.0 |
| Acetone | 3.1 | Mineral oil, light | 0.0 |
| Bleach ~5% NaOCl | 0.4 | Salt Water (3.5% NaCl) | 0.4 |
| Butyl Acetate | -0.1 | Skydrol 5 | 0.2 |
| Diesel Fuel | 0.0 | Sodium hydroxide solution (0.025% pH = 10) | 0.4 |
| Diethyl glycol monomethyl ether | 0.5 | Strong Acid (HCl Conc) | 0.2 |
| Hydraulic Oil | 0.5 | TPM | 0.1 |
| Hydrogen peroxide (3%) | 0.0 | Water | 0.5 |
| Isooctane | 0.0 | Xylene | 0.0 |
| Isopropyl Alcohol | -0.1 | | |

¹ Material properties may vary based on part geometry, print orientation, print settings, temperature, and disinfection or sterilization methods used.

² Data was obtained from parts printed on a Form 3 printer with 100 µm Clear Resin V41 settings, washed in a Form Wash for 5 minutes in >99% Isopropyl Alcohol, and post-cured at 60°C for 15 minutes in a Form Cure.