

General Purpose Resins

Materials for High Resolution Models and Rapid Prototyping

High Detail. For demanding applications, our carefully-engineered resins capture the finest features in your model.

Strong and Precise. Our resins create accurate and robust parts, ideal for rapid prototyping, functional testing and product development.

Smooth Surface Finish. Perfectly smooth right out of the printer, parts printed on the Formlabs stereolithography printers have the polish and finish of a final product.



V4 Clear
FLGPCL04

V4 Grey
FLGPGR04

V2 Draft
FLDRGR02

V1 Grey Pro
FLPRGR01

V4 White
LGPWH04

V4 Black
FLGPBL04

V4 Color
FLGPCB01

* May not be available in all regions

Prepared 04 . 09 . 2016

Rev. 01 04 . 09 . 2016

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.

MATERIAL PROPERTIES DATA

Standard Resins

The following material properties are comparable for Clear Resin, White Resin, Grey Resin, Black Resin, and Color Kit.

	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Ultimate Tensile Strength	38 MPa	65 MPa	5510 psi	9380 psi	ASTM D638-14
Tensile Modulus	1.6 GPa	2.8 GPa	234 ksi	402 ksi	ASTM D638-14
Elongation at Break	12%	6%	12%	6%	ASTM D638-14
Flexural Properties					
Flexural Modulus	1.3 GPa	2.2 GPa	181 psi	320 psi	ASTM D 790-15
Impact Properties					
Notched Izod	16 J/m	25 J/m	0.3 ft-lbf/in	0.46 ft-lbf/in	ASTM D256-10
Thermal Properties					
Heat Deflection Temp. @ 1.8 MPa	43 °C	58 °C	109 °F	137 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	50 °C	73 °C	121 °F	134 °F	ASTM D 648-16

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, Clear settings, without additional treatments.

³ Data was obtained from parts printed using Form 2, 100 µm, Clear settings and post-cured with 1.25 mW/cm² of 405 nm LED light for 60 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:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	< 1	Mineral oil (Light)	< 1
Acetone	Sample cracked	Mineral oil (Heavy)	< 1
Bleach ~5% NaOCl	< 1	Salt Water (3.5% NaCl)	< 1
Butyl Acetate	< 1	Skydrol 5	1
Diesel Fuel	< 1	Sodium Hydroxide solution (0.025% PH 10)	< 1
Diethyl glycol Monomethyl Ether	1.7	Strong Acid (HCl conc)	Distorted
Hydraulic Oil	< 1	Water	< 1
Hydrogen peroxide (3%)	< 1	Xylene	< 1
Isooctane (aka gasoline)	< 1		
Isopropyl Alcohol	< 1		

Draft

Draft Resin for Truly Rapid Prototyping

Draft Resin prints up to four times faster than Formlabs standard materials, making it ideal for initial prototypes and rapid iterations to help bring products to market faster. Parts printed with Draft Resin exhibit a smooth grey finish and high accuracy. Use 200 micron settings for fast print speeds, or use 100 micron settings for models with finer details.

Initial prototypes

Live 3D printing demos

Rapid design iterations

High throughput applications



V2

FLDRGR02

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Prepared 10 . 07 . 2020

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MATERIAL PROPERTIES DATA

Draft Resin

	METRIC ¹			IMPERIAL ¹			METHOD
	Green ²	Post-Cured at Room Temperature ³	Post-Cured at 60 °C ⁴	Green ²	Post-Cured at Room Temperature ³	Post-Cured at 140 °F ⁴	
Tensile Properties							
Ultimate Tensile Strength	24 MPa	36 MPa	52 MPa	3481 psi	5221 psi	7542 psi	ASTM D638-14
Tensile Modulus	0.8 GPa	1.7 GPa	2.3 GPa	122 ksi	247 ksi	334 ksi	ASTM D638-14
Elongation at Break	14%	5%	4%	14%	5%	4%	ASTM D638-14
Flexural Properties							
Flexural Modulus	0.6 GPa	1.8 GPa	2.3 GPa	87 ksi	261 ksi	334 ksi	ASTM D 790-17
Impact Properties							
Notched Izod	26 J/m	29 J/m	26 J/m	0.5 ft-lbf/in	0.5 ft-lbf/in	0.5 ft-lbf/in	ASTM D256-10
Thermal Properties							
Heat Deflection Temp. @ 1.8 MPa	37 °C	44 °C	57 °C	99 °F	111 °F	135 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	43 °C	53 °C	74 °C	109 °F	127 °F	165 °F	ASTM D 648-16

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

² Data was obtained from green parts, printed using Form 3, 200 µm, Draft Resin settings, washed for 5 minutes in Form Wash and air dried without post cure.

³ Data was obtained from parts printed using a Form 3, 200 micron, Draft Resin settings, and post-cured with Form Cure at room temperature for 5 minutes.

⁴ Data was obtained from parts printed using a Form 3, 200 micron, Draft Resin settings, and post-cured with Form Cure at 60 °C for 5 minutes.

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 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	0.2	Mineral oil (Light)	1.0
Acetone	4.2	Mineral oil (Heavy)	< 1.0
Bleach ~5% NaOCl	0.1	Salt Water (3.5% NaCl)	0.3
Butyl Acetate	0.1	Skydrol 5	0.3
Diesel Fuel	0.1	Sodium Hydroxide solution (0.025% PH 10)	0.3
Diethyl glycol Monomethyl Ether	0.8	Strong Acid (HCl conc)	< 1.0
Hydraulic Oil	< 0.1	Tripropylene glycol monomethyl ether	0.3
Hydrogen peroxide (3%)	0.2	Water	1.0
Isooctane (aka gasoline)	< 1.0	Xylene	1.0
Isopropyl Alcohol	< 1.0		

Grey Pro

Resin for Versatile Prototyping

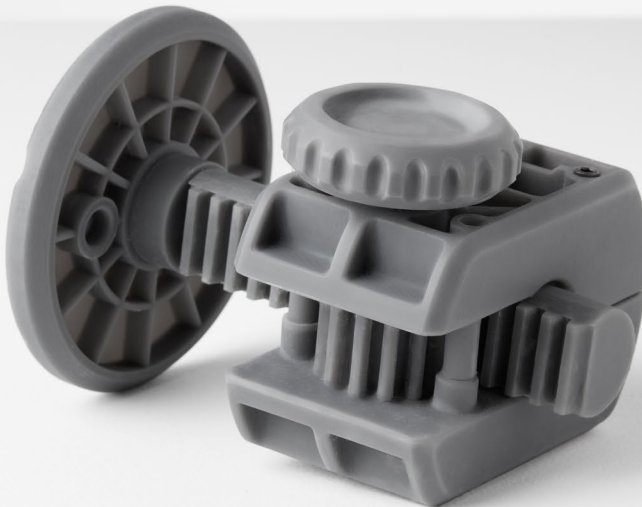
Grey Pro Resin offers high precision, moderate elongation, and low creep. This material is great for concept modeling and functional prototyping, especially for parts that will be handled repeatedly.

Form and fit testing

High quality product prototypes

**Mold masters for plastics
and silicones**

Jigs and fixtures for manufacturing



FLPRGR01

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MATERIAL PROPERTIES DATA

Grey Pro Resin

	METRIC ¹		IMPERIAL ¹		METHOD
	Green ²	Post-Cured ³	Green ²	Post-Cured ³	
Tensile Properties					
Ultimate Tensile Strength	35 MPa	61 MPa	5076 psi	8876 psi	ASTM D638-14
Tensile Modulus	1.4 GPa	2.6 GPa	203 ksi	377 ksi	ASTM D638-14
Elongation at Break	33%	13%	33%	13%	ASTM D638-14
Flexural Properties					
Flexural Stress at 5% Strain	39 MPa	86 MPa	5598 psi	12400 psi	ASTM D 790-15
Flexural Modulus	0.94 GPa	2.2 GPa	136 ksi	319 ksi	ASTM D 790-15
Impact Properties					
Notched Izod	Not tested	19 J/m	Not tested	0.35 ft-lbf/in	ASTM D256-10
Thermal Properties					
Heat Deflection Temp. @ 1.8 MPa	Not tested	62 °C	Not tested	144 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	Not tested	78 °C	Not tested	171 °F	ASTM D 648-16
Thermal Expansion (0-150 °C)	Not tested	79 µm/m/°C	Not tested	43 µin/in/°F	ASTM E 831-13

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, Grey Pro settings, without additional treatments.

³ Data was obtained from parts printed using Form 2, 100 µm, Grey Pro settings and post-cured with a Form Cure for 120 minutes at 80 °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:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	0.8	Isooctane (aka gasoline)	< 0.1
Acetone	11.0	Mineral oil (light)	0.4
Isopropyl Alcohol	1.6	Mineral oil (Heavy)	0.3
Bleach ~5% NaOCl	0.7	Salt Water (3.5% NaCl)	0.6
Butyl Acetate	0.8	Sodium Hydroxide solution (0.025% PH 10)	0.7
Diesel Fuel	< 0.1	Water	0.8
Diethyl glycol Monomethyl Ether	2.4	Xylene	0.4
Hydraulic Oil	0.2	Strong Acid (HCl conc)	8.2
Skydrol 5	0.5	Xylene	0.4
Hydrogen peroxide (3%)	0.8		