formlabs

GENERAL PURPOSE RESIN

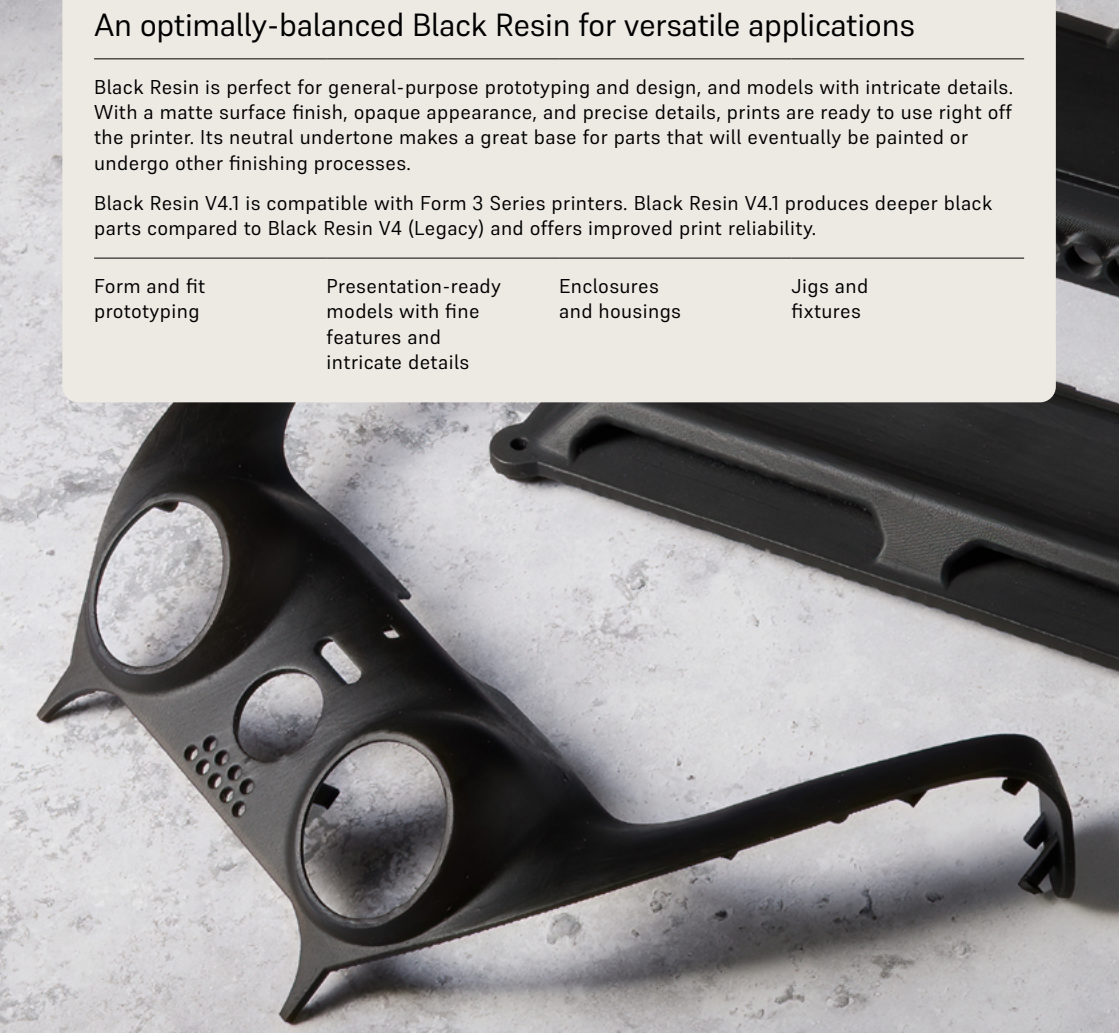
Black Resin V4.1

An optimally-balanced Black Resin for versatile applications

Black Resin is perfect for general-purpose prototyping and design, and models with intricate details. With a matte surface finish, opaque appearance, and precise details, prints are ready to use right off the printer. Its neutral undertone makes a great base for parts that will eventually be painted or undergo other finishing processes.

Black Resin V4.1 is compatible with Form 3 Series printers. Black Resin V4.1 produces deeper black parts compared to Black Resin V4 (Legacy) and offers improved print reliability.

- Form and fit prototyping
- Presentation-ready models with fine features and intricate details
- Enclosures and housings
- Jigs and fixtures



V4.1

FLGPBK41

Prepared 10/11/2024

Rev. 02 11/14/2024

Mechanical Properties	METRIC		IMPERIAL		METHOD
	GREEN	POST-CURED 30MIN @ 60C	GREEN	POST-CURED 30MIN @ 60C	
Ultimate Tensile Strength	31 MPa	48 MPa	4496 psi	6962 psi	ASTM D 638-14
Tensile Modulus	1427 MPa	2081 MPa	207 ksi	302 ksi	ASTM D 638-14
Elongation at Break (X/Y)	24%	12%	24%	12%	ASTM D 638-14

Flexural Properties	METRIC		IMPERIAL		METHOD
Flexural Strength	47 MPa	89 MPa	6817 psi	12908 psi	ASTM D 790-15
Flexural Modulus	1050 MPa	2260 MPa	152 ksi	328 ksi	ASTM D 790-15

Impact Properties	METRIC		IMPERIAL		METHOD
Notched Izod	29 J/m	27 J/m	0.551 ft-lbs/in	0.511 ft-lbs/in	ASTM D256-10

Thermal Properties	METRIC		IMPERIAL		METHOD
Heat Deflection Temp. @ 1.8 MPa	56 °C	65 °C	133 °F	149 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	49 °C	55 °C	120 °F	131 °F	ASTM D 648-16

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		
Hydraulic Oil	0.5	Strong Acid (HCl Conc)	0.2
Hydrogen peroxide (3%)	0.0	TPM	0.1
Isooctane	0.0	Water	0.5
Isopropyl Alcohol	-0.1	Xylene	0.0

[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 Black Resin V4.1 settings, washed in a Form Wash for 5 minutes in >99% Isopropyl Alcohol, and post-cured at 60°C for 30 minutes in a Form Cure.