formlabs Durable Resin Pliable Prototyping User Guide

Contents

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Product Information

Specifications

- Material: Durable Resin
- Type: Engineering Resin
- Features: Impact resistant, pliable, lubricious
- Applications: Squeezable prototypes, impact resistant jigs, low-friction assemblies

Material Properties

Metric	Green	Post-Cured
Tensile Strength	13 MPa	28 MPa
Elongation at Break	75%	55%

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, %

Product Usage Instructions

Preparation

- Ensure the printing surface is clean and level.

Printing

- Use appropriate settings for Durable Resin on your 3D printer.

Post-Processing

- Post-cure the printed object according to the recommended guidelines for Durable Resin.

Handling and Storage

- Store Durable Resin in a cool, dry place away from direct sunlight.

Cleaning

- Clean excess resin using suitable solvents as recommended by the manufacturer.

Safety Precautions

- Wear appropriate personal protective equipment when handling resin and during post-processing.

Description

Resin for Pliable Prototyping

- Durable Resin is the most pliable, impact resistant, and lubricious material in our functional family of Tough and Durable Resins. Choose Durable Resin for squeezable parts and low-friction assemblies.
    - Squeezable prototypes Low friction and non-degrading surfaces
    - Impact resistant jigs Polyethylene-like strength and stiffness

Material Specification

Material Properties	**METRIC 1**		**IMPERIAL 1**		**METHOD**
	Green 2	**Post-Cured 3**	**Green 2**	**Post-Cured 3**	
Tensile Properties	**METRIC 1**		**IMPERIAL 1**		**METHOD**
Ultimate Tensile Strength	13 MPa	28 MPa	1900 psi	3980 psi	ASTM D638-14
Tensile Modulus	0.24 GPa	1.0 GPa	34 ksi	149 ksi	ASTM D638-14
Elongation at Break	75%	55%	75%	55%	ASTM D638-14
Flexural Properties	**METRIC 1**		**IMPERIAL 1**		**METHOD**
Flexural Strength	1.0 MPa	24 MPa	149 psi	3420 psi	ASTM D790-15
Flexural Modulus	0.04 GPa	0.66 GPa	5.58 ksi	94.1 ksi	ASTM D790-15
Impact Properties	**METRIC 1**		**IMPERIAL 1**		**METHOD**
Notched Izod	127 J/m	114 J/m	2.37 ft-lb/in	2.13 ft-lb/in	ASTM D256-10
Unnotched Izod	972 J/m	710 J/m	18.2 ft-lb/in	13.3 ft-lb/in	ASTM D4812-11
Thermal Properties	**METRIC 1**		**IMPERIAL 1**		**METHOD**
Heat Deflection Temp. @ 0.45 MPa	< 30 °C	41 °C	< 86 °F	105 °F	ASTM D648-16
Thermal Expansion (0-150°C)	124 µm/m/°C	106 µm/m/°C	69.1 µin/in/°F	59 µin/in/°F	ASTM E831-13

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%	1.3	Isooctane (aka gasoline)	< 1
Acetone	Sample cracked	Mineral oil (light)	< 1
Isopropyl Alcohol	5.1	Mineral oil (Heavy)	< 1
Bleach ~5% NaOCl	< 1	Salt Water (3.5% NaCl)	< 1
Butyl Acetate	7.9	Sodium Hydroxide solution (0.025% PH 10)	< 1
Diesel Fuel	< 1	Water	< 1
Diethyl glycol monomethyl ether	7.8	Xylene	6.5
Hydraulic Oil	< 1	Strong Acid (HCl conc)	Distorted
Skydrol 5	1.3		
Hydrogen peroxide (3%)	1		

More Information

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, Durable settings, without additional treatments.
3. Data was obtained from parts printed using Form 2, 100 µm, Durable settings and post-cured with a Formcure for 60 minutes at 60 °C..

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.

FAQs

Q: Can Durable Resin be used for outdoor applications?

- A: Durable Resin is suitable for some outdoor applications but prolonged exposure to UV light may affect its properties.

Q: How should I dispose of excess resin?

- A: Follow local regulations for the disposal of resin waste. Do not pour excess resin down the drain.

Documents / Resources

	formlabs Durable Resin Pliable Prototyping [pdf] User Guide V2 FLDUCL02, V2.1 FLDUCL21, Durable Resin Pliable Prototyping, Durable Resin, Pliable Prototyping, Prototyping

References

- User Manual