SPECIALTY RESIN

formlabs

ESD

A rugged ESD-safe material to improve your electronics manufacturing workflows.

Reduce risk and increase manufacturing yield by 3D printing custom tools, jigs, and fixtures with ESD Resin that protect your critical electronics components from static discharge. ESD Resin is a cost-effective solution for producing static-dissipative parts designed to endure use on the factory floor.

Anti-static prototypes and end-use parts

Housings for sensitive electronics

Tooling, jigs, and fixtures for electronics manufacturing

V1 **FLESDS01**

* **May not be available in all regions**

Prepared 12 . 01 . 2021

Rev. 01 12 . 01 . 2021

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

ESD Resin

	METRIC [1, 2]	IMPERIAL [1,2]	METHOD
	Post-Cured	**Post-Cured**	
Mechanical Properties			
Ultimate Tensile Strength	44.2 MPa	6410 psi	ASTM D 638-14
Tensile Modulus	1.937 GPa	280.9 ksi	ASTM D 638-14
Elongation at Break	12%	12%	ASTM D 638-14
Flexural Properties			
Flexural Strength	61 MPa	8860 psi	ASTM D 790-17
Flexural Modulus	1.841 GPa	267 ksi	ASTM D 790-17
Impact Properties			
Notched IZOD	26 J/m	0.489 ft-lbs/in	ASTM D 256-10
Unnotched IZOD	277 J/m	5.19 ft-lbs/in	ASTM D 4812-11
Thermal Properties			
Heat Deflection Temp. @ 1.8 MPa	62.2 °C	143.9 °F	ASTM D 648-18
Heat Deflection Temp. @ 0.45 MPa	54.2 °C	129.6 °F	ASTM D 648-18
Thermal Expansion	123.7µm/m/°C	68.7µin/in/°F	ASTM E 813-13
Electrical Properties			
Surface Resistivity	10^5 - 10^8 Ω/sq		ANSI/ESD 11.11 [3]
Volume Resistivity	10^5 - 10^7 Ω-cm		ANSI/ESD 11.11 [3]
Physical Properties			
Density	1.116 g/cm^3	69.67 lbs/ft^3	ASTM D792
Hardness	90 Shore D		ASTM D2240

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

[2] Data for post-cured samples were measured on Type IV tensile bars printed on a Form 3 printer with 100 µm ESD Resin settings, washed in a Form Wash for 20 minutes in ≥99% Isopropyl Alcohol, and post-cured at 70°C for X 60 minutes in a Form Cure.

[3] ESD Resin was tested at NAMSA World Headquarters, OH, USA.

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%	0.5	Mineral oil, heavy	0.1
Acetone	13.1	Mineral oil, light	0.1
Bleach ~5% NaOCl	0.5	Salt Water (3.5% NaCl)	0.6
Butyl Acetate	3.8	Skydrol 5	0.5
Diesel Fuel	0.2	Sodium hydroxide solution (0.025% pH = 10)	0.7
Diethyl glycol monomethyl ether	3.6	Strong Acid (HCl Conc)	1.4
Hydraulic Oil	0.2	TPM	0.6
Hydrogen peroxide (3%)	0.6	Water	0.7
Isooctane	< 0.1	Xylene	1.60
Isopropyl Alcohol	2.6		