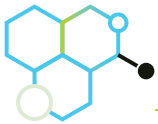


## Tough ESD — Photopolymer Resin Powered by Mech<sup>T</sup> for Isotropic Static-Dissipative Performance



Tough ESD by Mechnano is a black, tough, static-dissipative photopolymer resin. Tough ESD uses a urethane methacrylate base that includes a stable dispersion of discrete functionalized carbon nanotubes (Mech<sup>T</sup>) to achieve consistent static dissipative properties, while also providing enhanced impact resistance. It does this without compromising mechanical performance and with zero concern for z-axis breakdown.

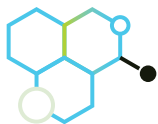


## Part Properties

PROPERTIES	UNITS	METHOD	GREEN <sup>1</sup>	POST-CURED <sup>2</sup>
<b>Mechanical Properties</b>				
Ultimate Tensile Strength	MPa	ASTM D 638-14	11.62	31.19
Tensile Modulus	MPa	ASTM D 638-14	121.33	802.71
Yield Strength (offset 0.2%)	MPa	ASTM D 638-14	5.11	22.61
Elongation at Break	%	ASTM D 638-14	58.5	42.91
<b>Flexural Properties</b>				
Flexural Strength	MPa	ASTM D 790-15*	6.25	33.19
Flexural Strain	%	ASTM D 790-15*	n/a <sup>3</sup>	n/a <sup>3</sup>
Flexural Stress @5% Strain	MPa	ASTM D 790-15*	3.23	30.80
Flexural Modulus	MPa	ASTM D 790-15*	86.07	969.92
<b>Impact Properties</b>				
Notched IZOD	J/m	ASTM D 256-10	114.33	45.42
<b>Electrical Properties</b>				
Surface Resistance	Ω	ANSI ESD S11.11	10 <sup>8</sup>	10 <sup>6</sup>

**Notes:**

- 1 Data was obtained from green parts fabricated using B9 Core 550, 50µm, custom settings, cleaned in IPA and dried in air.
- 2 Data was obtained from parts fabricated using B9 Core 550, 50µm, custom settings, cleaned in IPA, dried in air and post-cured with UV LED 405nm for 120 minutes at 60°C
- 3 Specimens did not break within the 5% strain limit when tested by Procedure A and B per ASTM D790-15. Beyond 5% strain, this test is not applicable. Testing was continued until 20% strain without a break on both green and post-cured specimens.
- 4 Done using rehometer at shear rate 10, [1/s] @25°C

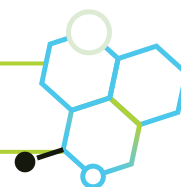


## Resin Properties

PROPERTY	CONDITION	MEASURE	VALUE
Color	**	**	Black
Viscosity	25°C	cps	1199 <sup>4</sup>

*Disclaimer: The data contained in this document is based on our current knowledge and experience. The performance of the product may vary with processing conditions, operating conditions, application, or with end use. Mechnano, LLC makes no warranties, expressed or implied, regarding the accuracy of these results with regards to system or end application.*

## Exponentially Improving Additive Manufacturing Materials



Mechnano's proprietary technology, Mech<sup>T</sup>, is backed by 120 patents and allows for exponential improvements of AM materials with properties that were previously thought impossible. Mech<sup>T</sup> enables improvements in areas such as static dissipation, impact, tear resistance, and tensile.

Whether you are ready to purchase Mechnano's ESD resin or if you have questions about our technology and applications, **let's start the conversation.**

**Mechnano, LLC**  
 3850 E. Baseline Rd.  
 Suite 126  
 Mesa, AZ 85206

