Technical Datasheet

C-LITE

High Temperature Static Dissipative

Photopolymer Resin

Black

C-LITE

C-Lite is a high temperature static dissipative photopolymer resin that includes a stable dispersion of discrete functionalized carbon nanotubes (D'Func) to achieve consistent static dissipative properties. The fabricated components can sustain service temperatures up to **250°C**.

Advantages

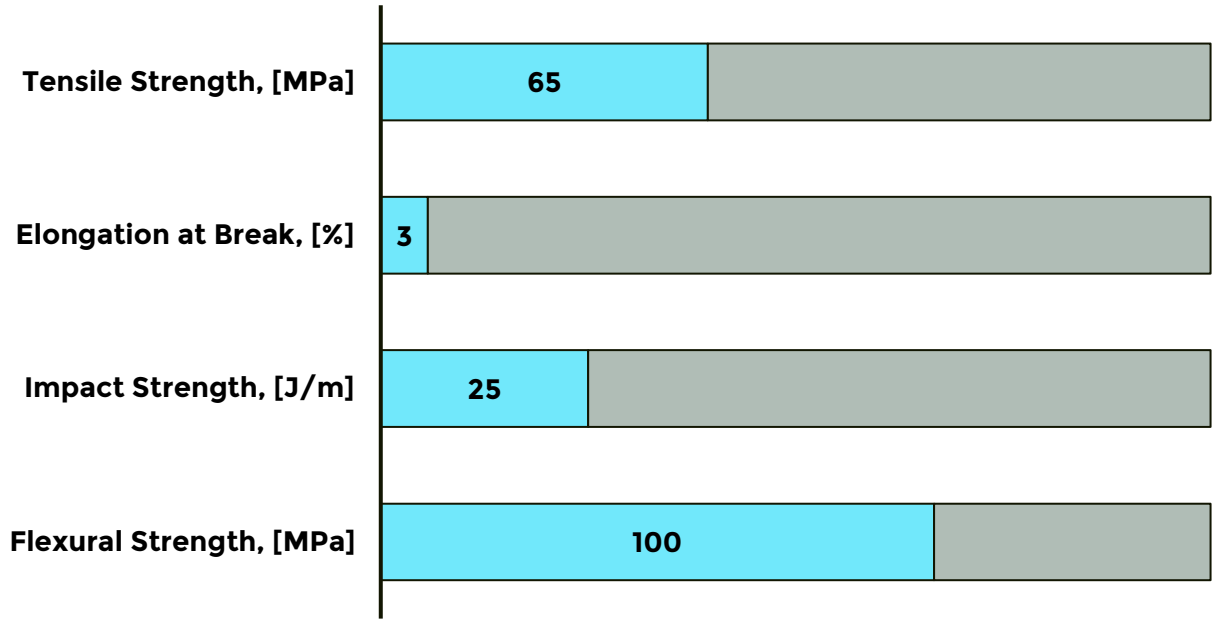
- Isotropic ESD performance: 10^6-10^7 Ω
- High service temperature (250°C)
- Excellent surface finish & fine details
- Non-Outgassing: Passed NASA ASTM E595-77/84/90 outgassing tests

Industries

- Electronic Manufacturing
- Semiconductor Manufacturing
- Automotive

Applications

- PCB tooling
- Reflow fixtures
- Wave soldering fixtures



PROPERTIES

The performance of the components is influenced by the hardware's processing parameters and post-cure protocols. High-temperature post-curing is required to achieve specified performance.

Mechanical Properties	Post-Cured	Units	Method
Ultimate Tensile Strength	60-70	MPa	ASTM D 638-14
Tensile Modulus	2700-2800	MPa	ASTM D 638-14
Elongation at Break	2.8-3.8	%	ASTM D 638-14
Flexural Strength	80-120	MPa	ASTM D 790-15
Flexural Modulus	2400-2500	MPa	ASTM D 790-15
Flexural Strain at Break	1.8-4.4	%	ASTM D 790-15
IZOD Impact Strength (Notched)	23-26	J/m	ASTM D 256-10
Hardness Shore “D”	80-90		ASTM D 2240
Electrical Properties			
Surface Resistance	10^6-10^7	Ω	ANSI ESD S11.11
Volume Resistivity	10^7	Ω×cm	ASTM D257
Liquid Properties			
Viscosity (25°C)[1]	1015	cps	ASTM D7867
Density	1.14	g/cm^3	ASTM D1475

Notes

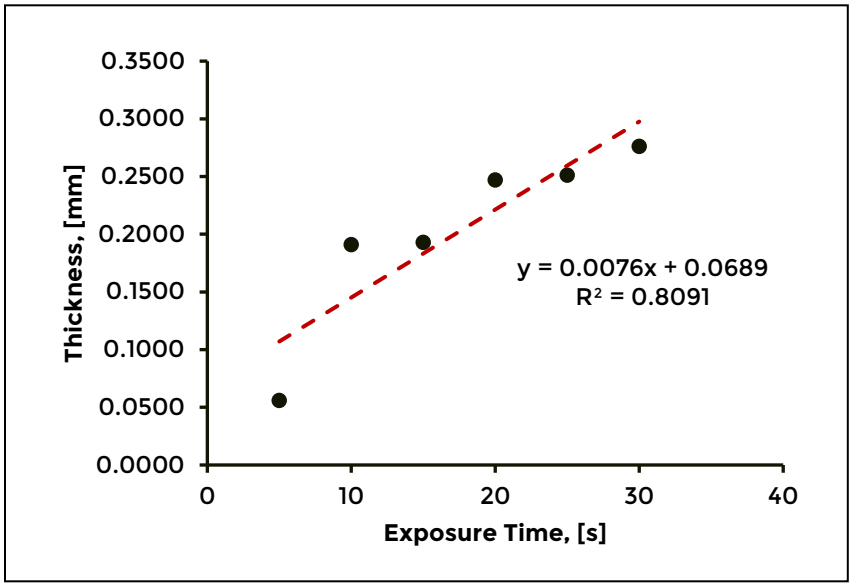
[1] The resin is shear-thinning. The data reported at shear rate 10, [1/s] @25°C

WORKFLOW

To achieve the properties specified in the TDS, validated workflows must be complied with. The following is an example of the verified workflow steps.

WORKING CURVE

The working curve was collected using 3.0 mW/cm² light source (405 nm) at room temperature.



E_c:	7.819	[mJ/cm²]
D_p:	0.116	[mm]

MACHINE SETTINGS

C-Lite is designed to fabricate parts on desktop and industrial DLP machines.

Recommended Build Parameters	
Temperature, [°C]	30-35
Wavelength, [nm]	385, 405
Irradiance, [mW/cm²]	5.5 – 10

Example Build Parameters (5.5 mW/cm² at 405 nm, 35°C):	
Layer Height, [µm]	100
Base Layer Exposure, [s]	60-95
Model Layer Exposure, [s]	15-90

VERIFIED HARDWARE

OEM	System(s)	Status
Asiga	All models	In progress
Stratasys	Origin One	In progress
Tethon3D	Bison1000	Qualified

POST-PROCESSING

C-Lite requires post-processing to achieve specified performance. Prior to post-curing, support structures should be removed from the fabricated component, and the part should be washed. It is recommended to use compressed air to remove residual solvent from features such as holes, pockets, slots, etc. between cleaning steps and prior to post-curing.

Step	Agent	Method	Duration	Intervals
Cleaning 1	IPA	Agitated Bath	2 – 5 min	1 to 2
Dry**	n/a	Compressed air	60 s	1 or 2
Wait before post-cure	n/a	Ambient	60 min	1

Notes
[1]Dry before intervals
[2]Dark space is recommended for storage

POST-CURE

C-Lite requires post-curing to achieve specified properties. The following protocol and post-curing equipment has been qualified to date. Other post-curing protocols will be added later.

Step	Curing Unit	Energy Source	Wavelength	Time	Temperature
1	Photocentric Cure L2	UV LED	405 nm	2 hrs	60°C
2	Convection Oven	**	**	2 hrs	160°C

NOTE: it is recommended to ramp temperature up at 2°C/min rate for heat treatment. After 2 hrs, ramp temperature down at 2°C/min rate.