

LOCTITE®

3843™

**PhotoPlastic HDT60
High Toughness
White**

LOCTITE®
5110 Port Chicago Hwy
Concord CA 94520
7/9/2020

Preliminary v2.1



3843™ HDT60 High Toughness White

Description

LOCTITE® Engineering Grade products are high performance fluids developed to be highly consistent with extraordinary attributes. LOCTITE® 3843™ is a high performance, high modulus product which boasts excellent flexural and tensile physical properties with a relatively high degree of elongation. LOCTITE® 3843™ displays high green strength and HDT enabling it to print accurately and function at body temperature. LOCTITE® 3843™ should only be printed on a DLP machine.

Available Colors: Matte Black, White, Clear, Gray

Mechanical Properties	Method	Green	Complete
Tensile Stress at Yield	ASTM D638	36.2 ± 1 MPa ^[2]	52.6 ± 1.05 MPa ^[3]
Tensile Stress at Break	ASTM D638	33.1 ± 2.6 MPa ^[2]	49 ± 1.5 MPa ^[3]
Young's Modulus	ASTM D638	1318 ± 31 MPa ^[2]	1720 ± 72 MPa ^[3]
Elongation at Failure	ASTM D638	74.4 ± 9.9 % ^[2]	47.6 ± 7.8 % ^[3]
Flexural Stress at Yield	ASTM D790	38.3 ± 1.66 MPa ^[4]	71.9 ± 1 MPa ^[5]
Flexural Modulus	ASTM D790	721 ± 36 MPa ^[4]	1673 ± 43.6 MPa ^[5]
Flexural Strain at Break	ASTM D790	> 10 % ^[4]	> 10 % ^[5]
Other Properties			
Shore D Hardness (0, 3 Seconds)	ASTM D2240	68, 64 ^[15]	70, 76 ^[16]
Solid Density (Green)	ASTM D1475	1.18 g/cm ³ ^[19]	1.18 g/cm ³ ^[19]
Heat Deflection Temperature (0.455 MPa)	ASTM D648	°C ^[6]	°C ^[7]
Heat Deflection Temperature (1.82 MPa)	ASTM D648	—	°C ^[18]
Heat Deflection Temp Via DMA (0.455 MPa)	Internal	50 °C ^[8]	61°C ^[9]
Heat Deflection Temp Via DMA (1.82 MPa)	Internal		43°C ^[13]
IZOD Impact (Notched, 6x12mm)	ASTM D256	—	58.3 ± 4.17 J/m ^[10]
IZOD Impact (Unnotched, 6x12mm)	ASTM D256	—	175.3 ± 12.8 J/m ^[11]
Water Absorption	ASTM D570	—	% ^[12]

Liquid Properties

Viscosity @ 25°C (77°F)	ASTM D7867	400 - 600 cP ^[14]
Liquid Density	ASTM D1475	1.07 g/cm ³ ^[17]

"All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23C / 40-60% RH for at least 24 hours." ASTM Methods: D638 Type IV, 5mm/min, D790-B, 2mm/min, D648, D256 Notched IZOD (Machine Notched), 6 mm x 12 mm, D570 0.125" x 2" Disc 24hr@ 25°C, D2240, Type "D" (0, 3 seconds), D7867, D1475

- External Lab Tested
- TaskID Reference: FOR17796
- TaskID Reference: FOR17795
- TaskID Reference: FOR17799
- TaskID Reference: FOR17797
- TaskID Reference: FOR17801
- TaskID Reference: FOR17800

- TaskID Reference: FOR17806
- TaskID Reference: FOR17805
- TaskID Reference: FOR17792
- TaskID Reference: FOR17793
- TaskID Reference: FOR17794
- TaskID Reference: FOR17807
- TaskID Reference:

- TaskID Reference: FOR17790
- TaskID Reference: FOR17789
- TaskID Reference: FOR17791
- TaskID Reference: FOR17808
- TaskID Reference: FOR17809



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Machine Settings

LOCTITE 3843™ is formulated to print optimally on any DLP machine. It is recommended to print with 405 nm wavelength projectors with irradiance between 3-7 mW/cm². Layer time is given below at 6 mW/cm²:

Layer Thickness:	25um	50um	100um
Base Cure Time:	45s	45s	45s
Model Layer Cure Time:	2s	3.5s	6s

Ec (mJ/cm ²)	7.194
Dp (mm):	0.170

Recommended printing Temperature range: 20°C to 45°C

Post Processing

LOCTITE® 3843™ requires post processing to achieve specified properties. Prior to post curing, support structures should be removed from the printed part, and the part should be washed in a compatible cleaner. LOCTITE® recommends either IPA or Cleaner C in 2 minute interval wash cycles. Use compressed air to remove residual solvent from the surface of the material between intervals. Exact times and methods can be found by contacting us at www.loctiteAM.com.

Post Curing

LOCTITE® 3843™ requires post curing to achieve specified properties. A wide array of post cure equipment can be used to cure appropriately. See Validation chart for examples of type and time. Exact devices with detailed information can be found by contacting us at www.loctiteAM.com.

Additional Development Options

Colors: LOCTITE® 3843™ formula is made with additional pigment colors.

Limitations

Vat Printer: LOCTITE® 3843™ formula is likely possible with recirculation VAT that can handle higher viscosity resins.

LCD printers: LOCTITE® 3843™ formula shows limited path forward for LCD projector printers at this time.

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Note

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