

LOCTITE®

3843™

PhotoPlastic HDT60

High Toughness

Matte Black

LOCTITE®
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7/9/2020

Preliminary v3.1



3843™ HDT60 High Toughness Matte Black

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.

LOCTITE® 3843™ has been tested in QUV exterior weathering conditions (ASTM G-154) for 800 hours with less than a 15% change in Tensile and IZOD Impact properties. ^[1]

Available Colors: Matte Black, Gray, Clear, White

Mechanical Properties	Method	Green	Post Processed
Tensile Stress at Yield	ASTM D638	43.8 ± 0.7 MPa ^[6]	52.9 ± 1.5 MPa ^[1]
Tensile Stress at Break	ASTM D638	37.8 ± 1 MPa ^[6]	50.9 ± 2.4 MPa ^[1]
Young's Modulus	ASTM D638	1572 ± 31 MPa ^[6]	1806 ± 47 MPa ^[1]
Elongation at Failure	ASTM D638	51.5 ± 10.3% ^[6]	43.4 ± 9.7% ^[1]
Flexural Stress at Yield	ASTM D790	49.4 ± 0.8 MPa ^[7]	73.8 ± 1 MPa ^[2]
Flexural Modulus	ASTM D790	1113 ± 23 MPa ^[7]	1783 ± 45 MPa ^[2]
Flexural Strain at Break	ASTM D790	>10 % ^[7]	>10% ^[2]
Other Properties			
HDT @ 0.455 MPa	ASTM D648	^[8]	63.2 ± 1.2°C ^[3]
IZOD Impact Strength (Notched)	ASTM D256		52.6 ± 3.8 ^[5]
Water Absorption (24hr)	ASTM D570		1.94% ^[10]
Water Absorption (72hr)	ASTM D570		3.21% ^[10]
Shore Hardness (0s, 3s)	ASTM D2240	68D, 63D ^[15]	74D, 67D ^[12]
Solid Density	ASTM D1475	1.18 g/cm ³ ^[13]	1.18 g/cm ³ ^[13]

Liquid Properties

Viscosity @ 25°C (77°F)	ASTM D7867	760 cP ^[11]
Liquid Density	ASTM D1475	1.07 g/cm ³ ^[13]

"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

1. TaskID Reference: FOR16424

2. TaskID Reference: FOR16426, FOR17678

3. TaskID Reference: FOR19725

4. TaskID Reference: FOR16437

5. TaskID Reference: FOR16427

6. TaskID Reference: FOR16425

7. TaskID Reference: FOR19115

8. TaskID Reference: FOR

9. TaskID Reference: FOR16438

10. TaskID Reference: FOR19118

11. TaskID Reference: FOR16420

12. TaskID Reference: FOR19117

13. TaskID Reference: FOR19114

14. TaskID Reference: FOR19116

15. TaskID Reference: FOR19119



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Machine Settings

LOCTITE® 3843™ is formulated to print optimally on any DLP machine. It is recommended to print with 385 nm wavelength projectors with irradiance between 3-7 mW/cm². Layer time is given below at 5 mW/cm²:

Layer Thickness:	25um	50um	100um		
Base Cure Time:	45s	45s	45s	Ec (mJ/cm ²)	11.16
Model Layer Cure Time:	4	5	7.5	Dp (mm):	0.21

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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