

**LOCTITE®**



*Picture provided by Stratasys*



# LOCTITE 3D 3172™

HDT50 High Impact  
Photoplastic  
Gray

**LOCTITE®**

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## 3172™

HDT50 HIGH IMPACT  
PHOTOPLASTIC  
GRAY



### LOCTITE 3D 3172™

LOCTITE 3D 3172 is a durable photopolymer resin that enables functional parts production where high stiffness with a good surface finish and high impact resistance are required. Parts manufactured with this resin can be machined, tapped or polished.

Loctite 3D 3172 is compatible with a broad range of DLP machines.



#### Benefits:

- Tough & durable
- Superior impact strength
- Nice surface finish, machine-able



#### Ideal for:

- Manufacturing aids / Jigs & Fixtures
- Housings
- Insoles



#### Markets:



Tensile Stress at Break (MPa)

50

Young's Modulus (MPa)

1400

Elongation at Break (%)

100

HDT at 0.455 MPa (°C)

52

*\*Values shown are linked to LOCTITE MED412 Matte ULTRA CLEAR as reference, please refer to the specific mechanical properties for each of the colors shown in this document*



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## MECHANICAL PROPERTIES

Mechanical Properties	Measure	Method	Green	Post Processed
Tensile Stress at Break	MPa	ASTM D638	32 ± 1 <sup>[1]</sup>	39 ± 2 <sup>[2]</sup>
Tensile Stress at Yield	MPa	ASTM D638	22 ± 1 <sup>[1]</sup>	34 ± 1 <sup>[2]</sup>
Young's Modulus	MPa	ASTM D638	909 ± 36 <sup>[1]</sup>	1494 ± 18 <sup>[2]</sup>
Elongation at Break	%	ASTM D638	148 ± 5 <sup>[1]</sup>	105 ± 14 <sup>[2]</sup>
<b>Other Properties</b>				
IZOD Impact (Notched)	J/m	ASTM D256	-	73 ± 6 <sup>[3]</sup>
HDT at 0.455 MPa	°C	ASTM D648	-	51 ± 0.7 <sup>[4]</sup>
Shore Hardness (0s, 3s)	D	ASTM 2240	65, 57 <sup>[5]</sup>	72, 63 <sup>[6]</sup>
Water Absorption (24 hr)	%	ASTM 570	-	1.5 <sup>[7]</sup>
Water Absorption (72 hr)	%	ASTM 570	-	2.1 <sup>[7]</sup>
Water Absorption (168 hr)	%	ASTM 570	-	3.1 <sup>[7]</sup>
Thermal Conductivity	mW/(m·K)	ASTM D5930	-	199 <sup>[8]</sup>
Heat Capacity	J/(g·K)	ASTM D5930	-	1.7 ± 0.1 <sup>[8]</sup>
Coefficient, Thermal Expansion	(m/m)/°C	ASTM E831	-	171 ± 4 <sup>[11]</sup>

Liquid Properties	Measure	Method	Value
Viscosity at 25°C (77°F)	cP	ASTM D7867	1700 - 2000 <sup>[9]</sup>
Liquid Density	g/cm <sup>3</sup>	ASTM D1475	1.1 <sup>[10]</sup>

\*All specimen are printed unless otherwise noted. All specimen were conditioned in ambient lab conditions at 19-23°C / 40-60% RH for at least 24 hours.\* ASTM Methods: D638 Type IV, 5 mm/min, D790-B, 2 mm/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

**Internal Data Sources:**

[1]FOR21293, [2] FOR21199, [3] FOR19120, [4] FOR19863, [5] FOR19123, [6] FOR19142, [7] FOR19125, [8] FOR26233, [9] FOR19122, [10] FOR37165, [11] FOR25783



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## WORKFLOW

Validated workflows need to be followed to achieve properties as provided in the TDS. Examples of validated workflow steps are listed below. Users should defer to the most current workflow information for best results which can be found at <https://www.loctiteam.com/printer-validation-settings>

## PRINTER SETTINGS

LOCTITE 3D 3172 Gray is formulated to print optimally on industrial DLP printer. Read the safety data sheet carefully to get details about health and safety instructions. Recommended print parameters:

- Shake resin bottle well before usage
- Temperature: 20°C to 35°C
- Intensity: 3 mW/cm<sup>2</sup> to 7 mW/cm<sup>2</sup>

### Exposure time for an intensity of 5 mW/cm<sup>2</sup>

Layer Thickness (µm):	25	50	100	Ec (mJ/cm <sup>2</sup> )	18.5
First layer time (s)	45	45	45	Dp (mm):	0.477
Burn in region (s):	2	3.5	6		
Model Layer Exposure (s):			7		

## POST PROCESSING

LOCTITE 3D 3172 Gray requires post processing to achieve specified properties. Prior to post curing, support structures should be removed from the printed part, and the part should then be washed. Use compressed air to remove residual solvent from the surface of the material between intervals.

Post Process Step	Agent	Method	Duration	Intervals	Additional Info
Cleaning	IPA	Ultrasonic	5 min	1	
Dry	n.a.	Compressed air	20 s	1	Air pressure (55psi)
Wait before post curing	n.a.	Ambient condition	60 min	1	Room temperature

## POST CURING

LOCTITE 3D 3172 Gray requires post curing to achieve specified properties. It is recommended that either an LED or wide spectrum lamp be used to post cure parts.

UC Curing Unit	UV Source	Intensity	Cure time/ side	Additional Settings (Shelf, Output Energy)
Loctite CL36	405nm LED	80 mW/cm <sup>2</sup> at 405 nm	20 min	100% top & side
Dymax 5000 EC Flood	Mercury Arc Bulb (broad spectrum)	150 mW/cm <sup>2</sup> at 380 nm	10 min	Shelf I



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## NOTE

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