IND406

HDT100

High Elongation

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IND406 HDT100 High Elongation

Description

LOCTITE® 3D IND406™ is a high-strength, high elongation engineering plastic with good impact resistance and high temperature resistance. Stiffness, toughness and thermal durability make this material ideal for a wide variety of tools in the production floor and for final parts production in Automotive and general industry. The product is ideal for tooling, interior and machinery parts. The unique set of performance attributes makes it comparable to ABS. Parts can be printed with various DLP printers and machined, tapped, or polished for final finish.

Mechanical Properties	**Method**	**Green State**	**Printed on Origin One 6.8mW/cm2, 385nm 10min/side Loctite UVALOC 140°C for 2Hours**
Tensile Stress at Break	ASTM D638	18.5± 1.9 MPa [1]	51.5 ± 0.8 MPa [2]
Young's Modulus	ASTM D638	449 ± 38 MPa [1]	1658 ± 89 MPa [2]
Elongation at Break	ASTM D638	42.4 ± 4.5% [1]	24.3± 2.2 % [2]
Notched Impact (Izod)	ASTM D256	75.0 ± 4.0 J/m [3]	35± 8 J/m [4]
HDT @ 0.455 MPa	ASTM D648	-	108.2 ± 0.4 °C [5]
Other Properties			
Shore Hardness 'D'	ASTM D2240	56.9 ± 0.8 [6]	79.2 ± 0.8 [7]
Water Absorption (24 h, 25 °C)	ASTM D570	-	1.42 ± 0.03 % [8}
Water Absorption (72 h, 25 °C)	ASTM D570	-	2.63 ± 0.04 % [9]
Thermal Properties			
Thermal Conductivity	ASTM D 5930-01	-	206 ± 3 mW/m*K [14]
Specific Heat	ASTM D 5930-01	-	1.46 ± 0.04 J/g*K [14]
Electrical Properties			
Dielectric Breakdown	ASTM D149	-	26.0 ± 0.3 kV/mm [13]
AC Loss Characteristics (Dissipation Factor)	ASTM D150	-	50Hz: 0.014 ± 0.005 1kHZ: 0.019 ± 0.002 1MHz: 0.022 ± 0.002 [11]
AC Permittivity (Dielectric Constant)	ASTM D150	-	50Hz: 3.6 ± 0.3 A*s/(V*m) 1kHz: 3.4 ± 0.2 A*s/(V*m) 1MHz: 3.1 ± 0.1 A*s/(V*m) [11]
Electrical Surface Resistance	ASTM D257	-	1.1 ± 0.6 E+15 Ω [12]
Electrical Volume Resistance	ASTM D257	-	4.5 ± 1.2 E+14 Ω*cm[12]

Liquid Properties

Viscosity @ 25°C (77°F)	ASTM D7867		1063cP [10]

"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, 5 mm/min; D256 Notched IZOD (Machine Notched), D648; D2240, Type "D" (0, 3 seconds); D570, 0.125" x 2" Disc, samples were dried at 50 °C for 24h; D7867@ 25°C (77°F).

[1]FOR22457
[2]FOR22458
[3]FOR20571
[4]FOR20572
[5]FOR20467
[6]FOR20367
[7]FOR20368
[8]FOR22529
[9]FOR22668
[10]FOR20806
[11]FOR25882
[12]FOR25880
[13]FOR25881
[14] FOR26105

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Machine Settings

LOCTITE® IND406 is formulated to print optimally on any DLP machine. It is recommended to print with 385-405 nm wavelength projectors with irradiance between 4-7 mW/cm².

Layer Thickness:	100 µm
First Layer Cure Time (6.4 mW/cm²)	40 s
Burn in Region Cure Time (6.4 mW/cm²)	25 s
Model Region Cure Time (6.4 mW/cm²)	6 s

Ec (mJ/cm²)	6.45
Dp (mm):	0.28

Recommended printing Temperature range: 25°C to 45°C

Post Processing

LOCTITE® IND406 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. Additionally the use of a spinner or centrifuge is recommended to remove surface residuals. LOCTITE® recommends rinsing the part in isopropanol, followed by a 2 minute wash in an ultrasonic bath using the recommended cleaners and using compressed air to remove residual solvent from the surface of the material. Allow the material to air dry for 30 minutes on a lint-free towel prior to post-curing. Exact times and methods can be found by contacting us at www.loctiteAM.com

Post Curing

It is recommend to use wide spectrum UV light (20-30 mW/cm², measured at 365 nm) such for 600 s per side followed by a 140 °C thermal postcure in a heated oven for 2 h. Place the printed part in the unheated oven, than switch it on allowing the part to thermalize while the temperature is ramping up to 140°C. After 2h at 140°C remove the part from the oven and let it rest to cool down slowly. Additional information can be found by contacting us at www.loctiteAM.com.

Additional Development Options

Colors: LOCTITE® IND406 formula can be made in additional pigment colors other than white and clear.

LCD printers: LOCTITE® IND406 has not been tested for LCD projector printers at this time.

Limitations

Post Cure: LOCTITE® IND406 requires broadband UV irradiation followed by heat for post cure.

Formula Modification: LOCTITE® IND406 has limited potential for reduction of viscosity.

Vat Printer: LOCTITE® IND406 has not been tested.

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Note

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