

LOCTITE®

nexa3D®

xPP405-Clear

PhotoPlastic

HDT50

High Elongation

Clear

xPP405-Clear HDT50 High Elongation Clear

Description

xPP405-Clear is a high elongation and high toughness material with outstanding impact resistance and excellent surface finish. This stiff and durable high performance material is ideal for a wide variety of tools in the production floor, including manufacturing aids and final parts such as housings and consumer goods applications. The unique set of performance attributes makes it comparable to an unfilled thermoplastic like polypropylene. Parts can be printed with various DLP printers and machined, tapped, or polished for final finish.

Available Colors: Black, Clear

Mechanical Properties *	Method	Green	Post Processed
Tensile Stress at Break	ASTM D638	30 ± 3 MPa ^[21]	35 ± 4 MPa ^[2]
Tensile Stress at Yield	ASTM D638	18 ± 1 MPa ^[21]	38 ± 1 MPa ^[2]
Young's Modulus	ASTM D638	793 ± 26 MPa ^[21]	1300 ± 23 MPa ^[2]
Elongation at Failure	ASTM D638	120 ± 14 % ^[21]	100 ± 18 % ^[2]
Maximum Flexural Stress	ASTM D790		45 ± 2 MPa ^[1]
Flexural Modulus	ASTM D790		1300 ± 76 MPa ^[1]
Flexural Strain at Break	ASTM D790		Does not Break ^[1]
Impact Strength—IZOD Notched	ASTM D256		65.27 ± 3 J/m ^[6]
Impact Strength—IZOD Unnotched	ASTM D256		>1500 J/m ^[6]
Other Properties			
HDT @ 0.455 MPa	ASTM D648		53°C ^[16]
Shore Hardness "D" (0s,3s)	ASTM D2240		79,76 ^[10]
Water Absorption	ASTM D570-98		2% ^[11]
Liquid Density	ASTM D1475		1.050 ^[12]
Solid Density (Green)	ASTM D1475		1.126 ^[12]
Solid Density (Post Processed)	ASTM D1475		1.134 ^[12]
Liquid Properties			
Viscosity @ 25°C (77°F)	ASTM D7867		2300 cP ^[5]

"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, 50mm/min, D790-B, 2mm/min, D256 Notched IZOD (Machine Notched), 6 mm x 12 mm, D648, D2240, Type "D" (0, 3 seconds), D1475, D7867

* Based on data provided by Henkel. This information is representative only. Contact your Nexa3D Technical Service Team for further information.

- 1) TaskID Reference: FOR16318
- 2) TaskID Reference: FOR21593
- 3) TaskID Reference: FOR5556
- 4) TaskID Reference: FOR9594
- 5) TaskID Reference: FOR16316
- 6) TaskID Reference: FOR24538
- 7) TaskID Reference: FOR10162
- 8) TaskID Reference: FOR16266
- 9) TaskID Reference: FOR16274

- 10) TaskID Reference: FOR18476
- 11) TaskID Reference: FOR16322
- 12) TaskID Reference: FOR17633
- 13) TaskID Reference: FOR18202
- 14) TaskID Reference: FOR18207
- 15) TaskID Reference: FOR18206
- 16) TaskID Reference: FOR18829
- 17) TaskID Reference: FOR18201
- 18) TaskID Reference: FOR18611

- 19) TaskID Reference: FOR18208
- 20) TaskID Reference: FOR18531
- 21) TaskID Reference: FOR19711
- 22) TaskID Reference: FOR20002

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Clear Color Properties **

Method: ASTM E308, Total Transmission

Part State	L*	a*	b*	C*	h	dE
Green / no post-processing ^[8]	92.425	-1.205	2.195	2.5	118.735	NA
Dymax 5000EC 10 minutes / side ^[9]	92.255	-0.52	1.265	1.37	112.28	1.17
Loctite CL36 60 min/side ^[22]	92.18	-0.32	0.89	0.94	109.88	1.831366

QUV exterior weathering conditions (ASTM G-154—Cycle 1): Clear color **

Method: ASTM G-154—Cycle 1 & ASTM E308, Total Transmission

QUV Exposure Time (Hrs)	L*	a*	b*	C*	h	dE
0	90.86	-0.65	1.03	1.22	122.49	NA
240	91.06	-0.47	1.42	1.49	108.47	0.47

QUV exterior weathering conditions (ASTM G-154—Cycle 1): Clear color mechanical properties **

Method: ASTM G-154—Cycle 1 FOR16324 5mm/min

QUV Exposure Time (Hrs)	Tensile Stress at break (MPa)	Yield Stress (MPa)	Young's Modulus (MPa)	Elongation at break (%)
0	49 ± 3	42 ± 1	1412 ± 60	116 ± 12
300	41 ± 3	40 ± 1	1343 ± 103	78 ± 12
520	41 ± 2	44 ± 1	1469 ± 35	63 ± 16
800	38 ± 1	45 ± 1	1478 ± 51	46 ± 16

Method: ASTM G-154—Cycle 1 FOR19972 5mm/min current

QUV Exposure Time (Hrs)	Tensile Stress at break (MPa)	Yield Stress (MPa)	Young's Modulus (MPa)	Elongation at break (%)
0	40±2	34±1	1260±34	118±12
325	35±2	36±1	1469±11	80±14
650	34±1	39±1	1510±32	68±7
975	30±2	37±1	1500±10	50±9

** Based on data provided by Henkel.

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Biocompatibility

Basic Biocompatibility. Passed ISO10993-5 and classified as Non-Irritant in -23

Post Processing

xPP405-Clear requires post processing to achieve specified properties. Contact your Nexa3D Technical Service Team for further information.

Post Curing

xPP405-Clear requires post curing to achieve specified properties. Contact your Nexa3D Technical Service Team for further information.

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Note

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Nexa3D is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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NOTE: Results may vary depending user workflow and geometry. Validation of final part is recommended.