E-3955— FST HH

Description

LOCTITE Engineering Grade products are high performance fluids developed to be highly consistent with extraordinary attributes. E-3955 is a high performance, high modulus product which boasts excellent flexural and tensile physical properties with outstanding flame retardance. E-3955 displays high HDT enabling it to be used in harsh environments without deformation or deflection. In preliminary testing, E-3955 passes flammability standards such as UL94 V-0 and AirBus AITM2-0002. E-3955 has been tested in QUV exterior weathering conditions (ASTM G-154—Cycle 1) for 1600 hours with less than a 15% change in Flexural properties[16].

Available Colors: Black

Mechanical Properties	Method	Thermal Post Cure
Tensile Stress at Break	ASTM D638	77 ± 5.9 MPa [5]
Young's Modulus	ASTM D638	3672 ± 24 MPa [5]
Elongation at Failure	ASTM D638	2.5 ± 0.3 % [5]
Flexural Stress at Break	ASTM D790	138 ± 16 MPa [1]
Flexural Modulus	ASTM D790	5200 ± 112 MPa [1]
Flexural Strain at Break	ASTM D790	2.9% ± 0.4 [1]
Other Properties		
Heat Deflection Temperature @ 0.455 MPa (Green)	Internal DMA	59.2°C [4]
Heat Deflection Temperature @ 0.455 MPa	ASTM D648 via VICAT	>250°C [13]
Heat Deflection Temperature @ 1.82 MPa	ASTM D648 via VICAT	197°C [14]
24hr Soak in Acetone @ 25C (Weight Change)	Internal	<0.2% [7]
24hr Soak in IPA @ 25C (Weight Change)	Internal	<0.2% [8]
24hr Soak in Water @ 25C (Weight Change)	Internal	0.4% [9]
168hr Soak in Water @ 80C (Weight Change)	Internal	1.0% [10]
Liquid Density (g/ml)	ASTM D792	1.27 [18]
Solid Density (g/ml)	ASTM D792	1.39 [18]
Rating	UL94 1.5mm/3mm Thickness	V0 [17]
Rating (12 second burn)	AirBus AITM2-0002 6mm Thickness	Pass [3]
Rating (60 second burn)	AirBus AITM2-0002 6mm Thickness	Pass [2]
Gas Components of Smoke	AirBus AITM3-0005 6mm Thickness	Pass [11]
Smoke Density	AirBus AITM2-0007 6mm Thickness	Pass [12]
CTE (Coefficient of Thermal Expansion) 25C - 160C	ASTM E831	80.5 µm/m/°C [15]
CTE (Coefficient of Thermal Expansion) 160C - 280C	ASTM E831	136 µm/m/°C [15]
Liquid Properties		
Viscosity @ 65°C (77°F)	ASTM D7867	800—1100 cP @ 25C [6]

1. TaskID Reference: FOR14451
2. TaskID Reference: FOR9673
3. TaskID Reference: FOR9674
4. TaskID Reference: FOR9502
5. TaskID Reference: FOR14447
6. TaskID Reference: FOR14443
7. TaskID Reference: FOR7944
8. TaskID Reference: FOR7945
9. TaskID Reference: FOR7942
10. TaskID Reference: FOR8992
11. TaskID Reference: FOR12856
12. TaskID Reference: FOR12855
13. TaskID Reference: FOR12712
14. TaskID Reference: FOR12713
15. TaskID Reference: FOR14194
16. TaskID Reference: FOR12313
17. TaskID Reference: FOR14455
18. TaskID Reference: FOR15859

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Pre-Melt Requirements

E-3955 requires pre-melt of material before use. It is recommended to heat E-3955 in the provided 1 kg container at 80°C for 4 hours to fully liquify the material in the container. Shake container before pouring material into tray.

Pre-Melt material should be kept at 60°C to maintain fluidity and should be used within 2 weeks of melting for best results.

Machine Settings

E-3955 is formulated to print optimally on any heated DLP machine. It is recommended to print with 385-405 nm wavelength projectors with irradiance between 3-7 mW/cm². Layer time is given below at 6 mW/cm^2. **This material must be printed at or above 55C. It is recommended to print at or above 65C.**

Layer Thickness:	50um	100um
Base Cure Time:	45s	45s
Model Layer Cure Time:	1.5s	2.5s

Post Processing / Post Curing

E-3955 requires post processing to achieve specified properties. Prior to post curing, support structures and excess resin should be removed from the printed part. E-3955 requires post curing to achieve specified properties.
A thermal cure is the only curing method required.
User must wear suitable respiratory protection during cleaning process.

1. Preheat Glycol Ether TPM wash to 80°C
2. Glycol Ether TPM wash in closed bottle, agitate by hand for 30 seconds@80°C
3. Manually clean any leftover residue using warm (80°C) Glycol Ether TPM
4. Remove excess Glycol Ether TPM parts using compressed air@30 PSI
5. Rinse residual Glycol Ether TPM off parts using Acetone Spray, do not soak in Acetone (optional)
6. Allow for Acetone/Glycol Ether TPM to dry off parts, 1+ hours@80°C
7. Place in cold oven and power on oven
8. 3°C per minute ramp from 20°C to 190°C, dwell at 150°C for 10 minutes and continue ramp
9. 6 hours@190°C
10. 1 hour@210°C
11. Turn off oven and allow enclosed oven to cool

Do not quench or expose to cold air until oven temperature is below 40°C

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