# Lyten Adhesive 6120HT with 3D Graphene

## Lyten 3D Graphene™ Enhanced Epoxy Adhesive

LYTEN

Technical Data Sheet

## Product Description

Lyten's 3D Graphene™ Epoxy Adhesive is a two-component toughened paste adhesive with high tensile lap shear strength.

| Features |
|---|
| High temperature service life |
| Formulated w/ 3D Graphene |
| Separate two-part system for ease of use & mix |

| Uncured Properties | Part A | Part B | Mixed |
|---|---|---|---|
| Color | Off White | Black | Black |
| Viscosity[1] | 56 Pa·S | 15 Pa·S | 20 Pa·S |
| Density | 1.20 g/mL | 1.03 g/mL | 1.15 g/mL |
| Shelf Life at: | | | |
| <77°F/25°C | 1 year | 1 year | |

## Handling

*Mixing* – Combine Part A and Part B according to the mix ratio shown below before applying to the parts. Complete mixing is required for optimal results. The temperature of both components should be equilibrated to room temperature (77 °F or 25 °C), although not required.

| Mix Ratio | Part A | Part B |
|---|---|---|
| By Weight | 100 | 43 |
| By Volume | 2 | 1 |

Note: Wt. ratio is recommended for structural applications.

Pot Life[2] – 80 minutes at 77 °F (25 °C)

## Application

*Mixing* – It is important to mix Part A and Part B thoroughly at the correct ratio. Do not mix over 450 grams, as heat buildup can occur, and the mixed adhesive may lead to decomposition. Toxic fumes can be generated and cause personal injury. Mixing at smaller quantities will minimize the heat buildup.

*Applying* – The surface to which adhesive is applied should be clean and dry. The bonded parts should be held in contact until the adhesive is set to a handling strength, which can be achieved in 24 hours at 77 °F or 25 °C. After that, any tooling or pressure used to support the bonded parts may be removed. Until the full bond strength is achieved, load application should be small.

*Curing* – For optimal bond strength, cure the adhesive for 1 hour at 176 °F (80 °C); alternatively, a 1-hour cure at 150 °F (65 °C) is acceptable.

*Clean-up* – To clean up excess uncured adhesive, use denatured alcohol, acetone, MEK, or any industrial solvents. For safe and proper use of solvents, please refer to the supplier's information.

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## Bond Strength Performance

*Tensile lap shear strength* – tested per ASTM D1002. Adherends are 2024-T3 AlClad aluminum at 0.063 inch (0.51mm) thickness treated with phosphoric acid anodize per ASTM D3933.

| Adhesive Cure Parameter | Test Temperature | | Typical Results | |
|---|---|---|---|---|
| | °F | °C | psi | MPa |
| 1 h at 150 °F (65 °C) | 68 | 20 | 6,060 | 41.8 |
| | 194 | 90 | 3,030 | 20.9 |
| 1 h at 176 °F (80 °C) | 68 | 20 | 6,270 | 43.2 |
| | 194 | 90 | 2,370 | 16.3 |
| | 230 | 110 | 1,075 | 7.4 |

*Tensile lap shear strength* – tested per ASTM D5868. Adherends are carbon fiber reinforced epoxy.

| Adhesive Cure Parameter | Test Temperature | | Typical Results* | |
|---|---|---|---|---|
| | °F | °C | psi | MPa |
| 1 h at 150 °F (65 °C) | 68 | 20 | 2,710 | 18.7 |
| | 194 | 90 | 2,350 | 16.2 |
| 1 h at 176 °F (80 °C) | 68 | 20 | 3,450 | 23.8 |
| | 194 | 90 | 2,640 | 18.2 |
| | 230 | 110 | 1,600 | 11.0 |

*Substrate failure

*Floating Roller Peel Strength* – tested per ASTM D3167. Adherends are 2024-T3AlClad peeling skin at 0.020 inch (0.51 mm) thickness and backing skin at 0.063 inch (1.6 mm) thickness aluminum treated with phosphoric acid anodize per ASTM D2922 and primed with BR-127.

| Adhesive Cure Parameter | Test Temperature | | Typical Results | |
|---|---|---|---|---|
| | °F | °C | lb/in | N/25mm |
| 1 h at 150 °F (65 °C) | 68 | 20 | 28 | 123 |

### Additional Testing Information

(1) Viscosity was measured at 25 °C (77 °F) at 2.1 rad/sec.

(2) Pot life (working life) was measured according to ISO 10346 under the following conditions:

a. Measuring system: plate-plate system with a 25mm parallel plate geometry
b. Shear conditions: at the shear rate of 1 s-1 with continuous shear with 1 s/pt sampling interval
c. Conditioning temperature: 25 °C (77 °F)
d. Mix ratio: 100:43 (A:B)
e. Total amount of adhesive mixed: 7 g
f. Amount of adhesive transferred into the measuring system: 1.5 g

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