

LOCTITE EA 9390 AERO

Epoxy Paste Adhesive

(KNOWN AS Hysol EA 9390)

INTRODUCTION

LOCTITE EA 9390 AERO is a two-component epoxy adhesive designed for composite repair. Its good wetting, high shear modulus and good hot/wet properties make it suitable as a wet lay-up resin for graphite or glass composite repairs.

FEATURES

- Low Viscosity
- Good Hot/Wet Strength
- Good Wetting
- High Shear Modulus
- Cures at 200°F/93°C
- BMS 8-301 Qualified

Uncured Properties

| | <u>Part A</u> | <u>Part B</u> | <u>Mixed</u> |
|------------------|--------------------|--------------------|---------------------|
| Color | Light Beige | Blue | Violet |
| Viscosity @ 77°F | 940 Poise | 0.9 Poise | 100 Poise |
| Brookfield, HBT | Spdl 6 @ 20 rpm | Spdl 1 @ 20 rpm | Spdl 3 @ 10 rpm |
| Viscosity @ 25°C | 94 Pa·S | 0.09 Pa·S | 10 Pa·S |
| Brookfield, HBT | Spdl 6 @ 2.1 rad/s | Spdl 1 @ 2.1 rad/s | Spdl 3 @ 1.05 rad/s |
| Density (g/ml) | 1.22 | 0.94 | 1.15 |
| Shelf life | | | |
| @ <40°F/4°C | 1 year | 1 year* | |
| @ <77°F/25°C | 6 months | 1 year* | |
| @ <90°F/32°C | 2 months | 1 year* | |

This material will normally be shipped at ambient conditions, which will not alter our standard warranty, provided that the material is placed into its intended storage upon receipt. Premium shipment is available upon request.

*Storage of Part B @ <40°F/4°C may cause crystallization. To remove crystals, slowly warm material to 150°F/66°C while stirring.

Handling

Mixing - This product requires mixing two components together just prior to application to the parts to be bonded. Complete mixing is necessary. The temperature of the separate components prior to mixing is not critical, but should be close to room temperature (77°F/25°C).

Mix Ratio

| | <u>Part A</u> | <u>Part B</u> |
|-----------|---------------|---------------|
| By Weight | 100 | 56 |

Note: Volume measurement is not recommended for structural applications unless special precautions are taken to assure proper ratios.





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Pot Life (250 gram mass) 2 hours @77°F/25°F
Method - ASTM D2471 in water bath.

Application

Mixing - Combine Part A and Part B in the correct ratio and mix thoroughly. THIS IS IMPORTANT! Heat buildup during or after mixing is normal. Do not mix quantities greater than 250 grams as dangerous heat buildup can occur causing uncontrolled decomposition of the mixed adhesive. TOXIC FUMES CAN OCCUR, RESULTING IN PERSONAL INJURY. Mixing smaller quantities will minimize the heat buildup.

Applying - Bonding surfaces should be clean, dry and properly prepared. For optimum surface preparation consult the LOCTITE Surface Preparation Guide. Cured bondline thickness may range from 3 to 6 mils (0.08 to 0.15 mm). For composite repair (wet lay-up), follow the composite part manufacturer's repair instructions.

Curing - This adhesive may be cured:
220 minutes @ 200°F/93°C
150 minutes @ 250°F/121°C
130 minutes @ 300°F/149°C

Cleanup - It is important to remove excess adhesive from the work area and application equipment before it hardens. Denatured alcohol and many common industrial solvents are suitable for removing uncured adhesive. Consult your supplier's information pertaining to the safe and proper use of solvents.

Bond Strength Performance

Tensile Lap Shear Strength

Tensile lap shear strength tested per ASTM D1002 after curing 1 hour @ 250°F/121°C. Adherends are 2024-T3 Bare aluminum with phosphoric acid anodized per ASTM D3933.

| <u>Test Temperature, °F/°C</u> | Typical Results | |
|--------------------------------|------------------------|------------|
| | <u>psi</u> | <u>MPa</u> |
| -67/-55 | 2,200 | 15.2 |
| 77/25 | 2,600 | 17.9 |
| 180/82 | 3,000 | 20.7 |
| 250/121 | 3,600 | 24.8 |
| 300/149 | 2,700 | 18.6 |
| 350/177 | 1,700 | 11.7 |



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Service Temperature

Service temperature is defined as that temperature at which this adhesive still retains 1000 psi/6.9 MPa using test method ASTM D1002 and is approximately >350°F/177°C.

Bulk Resin Properties

Tensile Properties - tested using 0.125 inch/3.18 mm castings per ASTM D638.

| | | |
|---|-----------|-----------|
| Tensile Strength @ 77°F/25°C | 8,200 psi | 56.5 MPa |
| Tensile Modulus @ 77°F/25°C | 418 ksi | 2880 MPa |
| Elongation at Break @ 77°F/25°C | 2.5% | |
| Shore D Hardness @ 77°F/25°C | 89 | |
| Tg Dry | 345°F | 174°C |
| Tg Wet | 302°F | 150°C |
| Shear Modulus Dry @100°F/38°C | 168 ksi | 1,157 MPa |
| Shear Modulus @100°F/38°C (water, 24 hours @ 200°F/93°C) | 160 ksi | 1,102 MPa |

Electrical Properties - tested per ASTM D149, D150.

| | |
|---------------------------------------|-------|
| Dielectric Constant, 1 KHz, 77°F/25°C | 4.19 |
| Dissipation Factor, 1 KHz, 77°F/25°C | 0.017 |

Handling Precautions

Do not handle or use until the Material Safety Data Sheet has been read and understood.
For industrial use only.

DISPOSAL INFORMATION

Dispose of spent remover and paint residue per local, state and regional regulations. Refer to HENKEL TECHNOLOGIES MATERIAL SAFETY DATA SHEET for additional disposal information.

PRECAUTIONARY INFORMATION**General:**

As with most epoxy based systems, use this product with adequate ventilation. Do not get in eyes or on skin. Avoid breathing the vapors. Wash thoroughly with soap and water after handling. Empty containers retain product residue and vapors so obey all precautions when handling empty containers.

PART A

CAUTION! This material may cause eye and skin irritation or allergic dermatitis. It contains epoxy resins.

PART B

WARNING! This material causes eye and skin irritation or allergic dermatitis. It contains amines.

Before using this product refer to container label and HENKEL TECHNOLOGIES MATERIAL SAFETY DATA SHEET for additional precautionary, handling and first aid information.



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