



LOCTITE EA 9394/ C-2 AERO Epoxy Paste Adhesive (KNOWN AS Hysol EA 9394/ C-2)

INTRODUCTION

LOCTITE EA 9394/C-2 AERO is an elevated temperature curing, high service temperature structural paste adhesive. LOCTITE EA 9394/C-2 AERO uses a non-aromatic amine curing agent that retains many of the excellent properties offered by aromatic amine cured systems, high temperature service with a long pot life. LOCTITE EA 9394/C-2 is qualified to MMM-A-132, Type II.

FEATURES

- Excellent Strength Above 400°F/204°C
- Non-MDA, Non Aromatic Amine Curing Agents
- Long Pot Life
- Long Term Thermal Stability

Uncured Properties

| | <u>Part A</u> | <u>Part B</u> |
|------------------------|-------------------------|-------------------------|
| Color | Gray | Purple-Dark Green |
| Viscosity @ 77°F | 6,500 Poise | 0.4 Poise |
| Viscometer, Brookfield | HBT Spdl 7 @ 20 rpm | LVF Spdl 1 @ 30 rpm |
| Viscosity @ 25°C | 650 Pa·S | 0.04 Pa·S |
| Viscometer, Brookfield | HBT Spdl 7 @ 2.09 rad/s | LVF Spdl 1 @ 3.17 rad/s |
| Density (g/ml) | 1.45 | 1 |
| Shelf life | | |
| @ <40°F/4°C | 1 year | 1 year |
| @ <77°F/25°C | 1 year | 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.

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).

| <u>Mix Ratio</u> | <u>Part A</u> | <u>Part B</u> |
|------------------|---------------|---------------|
| By Weight | 100 | 20 |

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

Pot Life (450 gram mass) 7 hours @ 77°F/25°C
Method - ASTM D2471 in water bath.





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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 450 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. The bonded parts should be held in contact until the adhesive is set

Curing - This adhesive must be cured for 1 hour @ >200°F/93°C to achieve normal performance.

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 for 1 hour @ 200°F/93°C. Adherends are 2024-T3 Bare aluminum treated with phosphoric acid anodized per ASTM D3933.

| <u>Test Temperature, °F/°C</u> | Typical Results | |
|--------------------------------|------------------------|------------|
| | <u>psi</u> | <u>MPa</u> |
| -67/-55 | 3,500 | 24.1 |
| 77/25 | 5,000 | 34.5 |
| 180/82 | 4,000 | 27.6 |
| 250/121 | 3,200 | 22.0 |
| 300/149 | 3,000 | 20.7 |
| 350/177 | 2,500 | 17.2 |
| 400/204 | 1,700 | 11.7 |
| 450/232 | 1,200 | 8.3 |
| 500/260 | 800 | 5.5 |

Tensile Lap Shear Strength - Thermal Aging Performance Results

| <u>Thermal Aging Hours @ 350°F/177°F</u> | Tested at 350°F/177°C | |
|--|------------------------------|------------|
| | <u>psi</u> | <u>MPa</u> |
| No Exposure | 2,443 | 16.8 |
| 1000 | 2,784 | 19.2 |
| 2000 | 2,589 | 17.9 |
| 5000 | 2,613 | 18.0 |
| 12,000 | 2,355 | 16.2 |





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Epoxy Paste Adhesive

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Tensile Lap Shear Strength - MMM-A-132 Type II Performance Results

| <u>Conditioning</u> | <u>Tested at 77°F/25°C</u> | |
|--|---|------------|
| | <u>psi</u> | <u>MPa</u> |
| 48 hours at @ 77°F/25°C | 5,490 | 37.9 |
| 10 minute soak @ 300°F/149°C | 3,100 | 21.4 |
| 192 hours at @ 300°F/149°C | 3,230 | 22.3 |
| 10 minute soak @ -67°F/-55°C | 3,880 | 26.8 |
| Hydraulic Oil (MIL-H-83282) for 7 days @ 77°F/25°C | 5,640 | 38.9 |
| Jet Fuel (JP-4) for 7 days @ 77°F/25°C | 5,640 | 38.9 |
| 30 days @ 120°F/49°C & 95-100% R.H. | 5,260 | 36.3 |
| Fatigue Strength @ 77°F/25°C | 750 psi (52 bar) for 10 ⁶ cycles | |
| Creep Rupture 1600 psi/110 bar @ 77°F/25°C for 192 hours | <0.1 mil /<25.4 microns | |
| Creep Rupture 1600 psi/110 bar @ 300°F/149°C for 192 hours | <0.1 mil /<25.4 microns | |

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 450°F/232°C.

Bulk Resin Properties

Compressive Properties - tested using Cylindrical 1.40 inch/ 35.6 mm tall x 0.55 inch/14 mm diameter samples per ASTM D695 cured for 1 hour @ 200°F/93°C.

| <u>Compression Strength, Ultimate Load</u> | <u>psi</u> | <u>MPa</u> |
|--|------------|------------|
| Tested @ 77°F/25°C | 32,000 | 220.7 |
| Tested @ 250°F/121°C | 17,000 | 117.2 |

Shore D Hardness Tested @ 77°F/25°C,

Adhesive cure 1 hour at 200°F/93°C 84
Approx. 0.25 inch/6.35 mm thick

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.





Technical Process Bulletin

LOCTITE EA 9394/ C-2 AERO Epoxy Paste Adhesive (KNOWN AS Hysol EA 9394/ C-2)

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.

Note

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