



Hysol® EA 9395

Epoxy Paste Adhesive

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Description

Hysol EA 9395 is a two-component adhesive system, which cures at ambient temperature and has excellent strength properties @ 350°F/177°C and higher. This product is thixotropic and is ideal for potting, filling and fairing applications. Hysol EA 9395 does not contain metallic filler and can be used with composite substrates. It is ideal for applications where RAM/RAS considerations are important.

Features

Non-Metallic Filler
Cures at Ambient Temperature
Thixotropic
Excellent Mechanical Properties
Good Compressive Strength

Uncured Adhesive Properties

| | <u>Part A</u> | <u>Part B</u> | <u>Mixed</u> |
|------------------|---------------------|--------------------|---------------------|
| Color | Blue | Black | Gray-Blue |
| Viscosity @ 77°F | 4,000 - 8,000 Poise | 200 - 700 Poise | 1,000 - 3,000 Poise |
| Brookfield, HBT | Spdl 7 @ 20 rpm | Spdl 4 @ 20 rpm | Spdl 5 @ 20 rpm |
| Viscosity @ 25°C | 400 - 800 Pa·S | 20 - 70 Pa·S | 100 - 300 Pa·S |
| Brookfield, HBT | Spdl 7 @ 2.1 rad/s | Spdl 4 @ 2.1 rad/s | Spdl 5 @ 2.1 rad/s |
| Density (g/ml) | 1.45 | 1.00 | 1.27 |
| 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 | 17 |

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

Pot Life (450 g mass) 95 - 100 minutes @ 77°F/25°C
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 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 Hysol Surface Preparation Guide. The bonded parts should be held in contact until the adhesive is set. Handling strength for this adhesive will occur in 24 hours @ 77°F/25°C, after which the support tooling or pressure used during cure may be removed. Since full bond strength has not yet been attained, load application should be small at this time.

Curing - This adhesive may be cured for 5 days @ 77°F/25°C or 1 hour @ 150°F/66°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.

Henkel QC Acceptance Testing

This data sheet provides users with typical properties obtained from this adhesive. These values are not meant to be used to develop aerospace QC acceptance testing. Users interested in establishing values and tests for routine QC acceptance should request our internal specification (DAS), which provides detail test methods and values used to certify this adhesive.

Bond Strength Performance

Tensile Lap Shear Strength

Tensile lap shear strength tested per ASTM D1002 after curing for 5 days @ 77°F/25°C.
Adherends are 2024-T3 Alclad 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 | 2,300 | 15.8 |
| 77/25 | 4,000 | 27.6 |
| 180/82 | 2,500 | 17.2 |
| 250/121 | 2,200 | 15.2 |
| 300/149 | 1,800 | 12.4 |
| 350/177 | 1,200 | 8.3 |

Peel Strength

T-Peel strength tested per ASTM D1876 after curing for 5 days @ 77°F/25°C.
Adherends are 2024-T3 Alclad aluminum treated with phosphoric acid anodized per ASTM D3933.

| <u>Test Temperature, °F/°C</u> | Typical Results | |
|--------------------------------|------------------------|---------------|
| | <u>Lb/in</u> | <u>N/25mm</u> |
| 77/25 | 5 - 8 | 22-36 |

Bell Peel strength tested per ASTM D3167 after curing for 5 days @ 77°F/25°C.
 Adherends are 2024-T3 Alclad aluminum treated with phosphoric acid anodized per ASTM D3933.

| <u>Test Temperature, °F/°C</u> | Typical Results | |
|--------------------------------|------------------------|---------------|
| | <u>Lb/in</u> | <u>N/25mm</u> |
| 77/25 | 15 | 67 |

Specifications

The above values are typical results under ideal conditions. To establish certification values, please refer to the Henkel Aerospace Specification which defines quality control test values, methods and procedures. For a copy of the Henkel Aerospace Specification, contact Henkel's Literature Desk at (925) 458-8000.

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, cured 5 days @ 77°F/25°C.

| | Typical Results | |
|----------------------------------|------------------------|----------|
| | | |
| Tensile Strength @ 77°F/25°C | 8,070 psi | 55.6 MPa |
| Tensile Modulus, dry @ 77°F/25°C | 717 ksi | 4940 MPa |
| Elongation at Break, @ 77°F/25°C | 2.6% | |
| Shore D Hardness @ 77°F/25°C | 90 | |
| Tg (tan delta by DMTA) | 163°F | 73°C |
| Shear Modulus, dry @ 77°F/25°C | 224 ksi | 1543 Mpa |

Compressive Properties - tested with cylindrical specimens 0.5 inch/12.7 mm diameter by 1 inch/25.4mm per ASTM D695.

| | Typical Results | |
|-----------------------------|------------------------|------------|
| | psi | MPa |
| Compressive Strength, °F/°C | -67/-55 | 22,700 |
| | 75/25°C | 14,000 |
| | 250/121°C | 10,100 |
| | 350/177°C | 6,800 |
| Compressive Modulus, °F/°C | ksi | MPa |
| | 77/25°C | 429 |
| | | 2.956 |

Electrical Properties - tested per ASTM D149, D150.

| | Typical Results | | |
|---------------------|------------------------|----------------|-----------------|
| | 0.1 KHz | 1.0 KHz | 10.0 KHz |
| Dielectric Constant | 4.22 | 4.13 | 3.97 |
| Dissipation Factor | .016 | .021 | .033 |

Handling Precautions

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

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.

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Users should review the Materials Safety Data Sheet (MSDS) and product label for the material to determine possible health hazards, appropriate engineering controls and precautions to be observed in using the material. Copies of the MSDS and label are available upon request.

