



# Hysol® EA 9323

## Epoxy Paste Adhesive

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### Description

Hysol EA 9323 is a two-component paste adhesive, which is low in viscosity, possesses some toughness and maintains high temperature strength. Its room temperature cure capability makes it ideal for repair of metal and composite structure, including laminating and injection. Hysol EA 9323 has no metallic fillers.

### Features

Two Component System  
High Temperature Strength  
Low Viscosity  
Unfilled  
Toughness

### Uncured Adhesive Properties

	<b><u>Part A</u></b>	<b><u>Part B</u></b>	<b><u>Mixed</u></b>
Color	Amber	Amber	Amber
Viscosity, 77°F Brookfield, HBT	700 Poise Spdl 5 @ 20 rpm	20 Poise Spdl 2 @ 20 rpm	
Viscosity, 25°C Brookfield, HBT	70 Pa·S Spdl 5 @ 2.1 rad/s	2.0 Pa·S Spdl 2 @ 2.1 rad/s	
Density	1.25 gm/ml	0.96 gm/ml	
Shelf Life			
@ <40°F/4°C	1 year	1 year	
@ <77°F/25°C	3 mos	1 year	
@ <90°F/32°C	1 mo	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).

<b><u>Mix Ratio</u></b>	<b><u>Part A</u></b>	<b><u>Part B</u></b>
By Weight	100	45

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

**Pot Life** (450 gm mass): 30 minutes  
Method - ASTM D 2471 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** - Hysol EA 9323 may be cured for 5 to 7 days @ >77°F/25°C to achieve normal performance. Accelerated cures up to 200°F/93°C (for small masses only) are used as an alternative. For example, 1 hour @ 180°F/82°C will give complete cure.

**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 with 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 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>	<b>Typical Results</b>	
	<u>psi</u>	<u>MPa</u>
-67/-55	2,800	19.3
77/ 25	4,200	28.9
180/82	1,200	8.3
250/121	1,100	7.6
350/177	600	4.1

#### After Exposure to\*:

	<b>Typical Results</b>	
	<u>psi</u>	<u>Mpa</u>
Control	4,200	28.9
120°F/49°C - 100% RH - 30 days	2,800	19.3
Salt Spray - 105°F/41°C - 30 days	3,150	21.7

\*Test Temperature, 77°F/25°C

### ***Peel Strength***

Bell peel strength (ASTM D3167) tested during curing for 5 days @ 77°F/25°C. Adherends are 2024-T3 bare aluminum treated with chromic acid etch (ASTM D2651).

<u>Test Temperature, °F/°C</u>	<u>Typical Results</u>	
	<u>lb/in</u>	<u>N/25mm</u>
67/-55	5	22.2
77/ 25	4	17.8
180/82	22	97.8

### **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 250°F/121°C.

### **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.

### **Bulk Resin Properties**

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

Tensile Strength, @77°F/25°C	3,500 psi	24.1 MPa
Tensile Modulus, @77°F/25°C	375 ksi	2.58 GPa
Elongation at Break, % @77°F/25°C	9.0	
Shore D Hardness @ 77°F/25°C	86	
T <sub>g</sub> dry	207°F	97°C
T <sub>g</sub> wet	157°F	69°C
Shear Modulus	135 ksi	930 MPa
Poisson's Ratio	0.39	

***Compressive Properties*** - tested using 0.5 inch/12.7 mm castings per ASTM D695.

Compressive Strength, @77°F/25°C	8,800 psi	60.6 MPa
Compressive Modulus, @77°F/25°C	266 ksi	1833 MPa

***Electrical Properties*** - tested per ASTM D149, D150

Dielectric Constant, 1 KHz, 77°F/25°C	3.43
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.

### **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**

***WARNING!*** As with most epoxy based systems, the uncured adhesive causes eye irritation and may cause skin irritation or allergic dermatitis. Contains epoxy resins.

**PART B**

***DANGER!*** Causes severe skin and eye burns. Contains diethylenetriamine. Vapors may be irritating to the respiratory tract.

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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.

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