



# Hysol® EA 9309.2NA

## Epoxy Paste Adhesive

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### Description

Hysol EA 9309.2NA is a non-asbestos version of Hysol EA 9309.2. Hysol EA 9309.2NA consists of an off-white epoxy paste (Part A), and a blue liquid curing agent (Part B). Hysol EA 9309.2NA bonds metal skins and honeycomb core to yield tough permanently flexible joints that resist humidity, water and most common fluids. Its outstanding feature is high shear and peel strength on aluminum bonds at moderate temperatures.

### Features

High Shear Strength  
Two-Part Paste  
Room Temperature Storage  
High Peel Strength

### Uncured Adhesive Properties

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Off-White	Blue	Blue
Viscosity @ 77°F Brookfield, HBT	3,000 - 6,000 Poise Spdl 7 @ 20 rpm	0.3 - 0.7 Poise Spdl 1 @ 100 rpm	
Viscosity @ 25°C Brookfield, HBT	300 Pa·S Spdl 7 @ 2.09 rad/s	0.05 Pa·S Spdl 1 @ 2.09 rad/s	
Shelf life @ <77°F/25°C	1 year	1 year	

### 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	22

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

**Pot Life** (450g mass) 30 minutes minimum  
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 to achieve normal performance. Accelerated cures up to 200°F/93°C (for small masses only) may be 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 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 7 days @ 77°F/25°C. Adherends are 2024-T3 clad 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	4,600	31.7
77/25	5,400	37.2
180/82	1,000	6.9

### **Peel Strength**

T-Peel strength tested per ASTM D1876 after curing for 7 days @ 77°F/25°C.

Adherends are 2024-T3 clad aluminum treated with phosphoric acid anodized per ASTM D3933.

<u>Test Temperature, °F/°C</u>	<b>Typical Results</b>	
	<u>Lb/in</u>	<u>N/25 mm</u>
77/25	40	178

## 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 180°F/82°C.

### **Bulk Resin Properties**

**Tensile Properties** - tested using 0.125 inch/3.18 mm castings per ASTM D638, after curing 1 hour @ 180°F/82°C.

Tensile Strength @ 77°F/25°C	5,500 psi	37.9 MPa
Tensile Modulus @ 77°F/25°C	340 ksi	2343 MPa
Elongation at Break, @ 77°F/25°C	4.8%	
Shore D Hardness @ 77°F/25°C	80	
Tg dry	174°F	79°C
Tg wet	138°F	59°C
Shear Modulus	130 ksi	890 MPa

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

Compressive Strength @ 77°F/25°C	7,700 psi	53.0 MPa
Compressive Modulus @ 77°F/25°C	218 ksi	1502 MPa

### **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.

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