



# Hysol® EA 9320NA

## Epoxy Paste Adhesive

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### Description

Hysol EA 9320NA is a two-component paste adhesive with good peel strength as well as elevated temperature resistance. With a room temperature cure, it will meet the requirements of MMM-A-132 Type 1 Class 2.

### Features

Two Component System  
High Peel  
Room Temperature Cure  
Good Elevated Temperature Strength  
Meets Strength Requirements of MMM-A-132 Type 1 Class 2

### Uncured Adhesive Properties

	<b><u>Part A</u></b>	<b><u>Part B</u></b>	<b><u>Mixed</u></b>
Color	Off White	Blue	
Viscosity, @ 77°F	4,000 Poise	0.1 Poise	
Brookfield, HBT	Spdl 7 @ 20 rpm	Spdl 1 @ 60 rpm	
Viscosity, 25°C	400 Pa·S	0.01 Pa·S	
Brookfield, HBT	Spdl 7@ 2.1 rad/s	Spdl 1 @ 6.3 rad/s	
Density (g/ml)	1.16	1.00	1.14
Warranty Life (from date of shipment)			
@ <40°F/4°C	1 year	1 year	
@ <77°F/25°C	1 year	1 year	
@ <90°F/32°C	6 mos	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	19

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

**Pot Life** (200 gm mass) 25 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 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 Hysol Surface Preparation Guide. The bonded parts must be assembled within 10 minutes of adhesive application and 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 EA9320NA 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) 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 D 1002 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,</u> <u>°F/°C</u>	<u>Typical Results</u>	
	<u>psi</u>	<u>MPa</u>
-67/-55	3,400	23.4
77/ 25	4,600	31.7
180/82	1,500	10.3

#### **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>	<u>Typical Results</u>	
	<u>Lb/in</u>	<u>N/25 mm</u>
77/25	20	3.5

#### **Service Temperature**

Service temperature is defined as that temperature at which this adhesive still retains 1000 psi /6.9 MPa using test method ASTM D 1002 and is >180°F/82°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	5,000 psi	34.5 MPa
Tensile Modulus @ 77°F/25°C	330 ksi	2,274 MPa
Elongation at Break, % @ 77°F/25°C	9.0	
Shore D Hardness @ 77°F/25°C	81	
T <sub>g</sub> (by DMTA)	180°F	82°C
Shear Modulus	145 ksi	999 MPa

**Compressive Properties** - tested using 0.5 inch/12.7 mm castings per ASTM D 695.

Compressive Strength, @ 77°F/25°C	8,000 psi	55.1 MPa
Compressive Modulus @ 77°F/25°C	265 ksi	1,826 MPa

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

Dielectric Constant, 1 KHz, 77°F/25°C	4.39
Dissipation Factor, 1 KHz, 77 F/25°C	0.024

### **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 or allergic dermatitis. Contains epoxy resins.

### **PART B**

**DANGER!** Causes severe skin and eye burns. Prolonged or repeated exposure may cause allergic skin reactions. 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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