



LOCTITE EA 9320NA AERO Epoxy Paste Adhesive (KNOWN AS Hysol EA 9320NA)

INTRODUCTION

LOCTITE EA 9320NA AERO 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

LOCTITE EA 9320NA AERO offers the following 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 Properties

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Off White	Blue	Blue
Viscosity @ 77°F	4,000 Poise	0.14 Poise	
Brookfield	HBT Spdl 7 @ 20 rpm	LVF Spdl 1 @ 60 rpm	
Viscosity @ 25°C	400 Pa·S	0.014 Pa·S	
Brookfield	HBT Spdl 7 @ 2.1 rad/s	LVF Spdl 1 @ 6.3 rad/s	
Density (g/ml)	1.16	1.00	1.14
Shelf Life			
@ <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).

<u>Mix Ratio</u>	<u>Part A</u>	<u>Part B</u>
By Weight	100	19

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





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Pot Life (200 gram mass) 25 minutes @ 77°F/25°C
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 LOCTITE 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 - LOCTITE EA9320NA AERO 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, °F/°C</u>	Typical Results	
	<u>psi</u>	<u>MPa</u>
-67/-55	4,900	33.8
77/ 25	5,000	34.5
180/82	2,300	15.9

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/25 mm</u>
77/25	40	178





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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.

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	
Tg (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.

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.

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.





Technical Process Bulletin

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Note

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Henkel Corporation Aerospace | 2850 Willow Pass Road | Bay Point, CA 94565
PHONE: +1.925.458.8000 | FAX: +1.925.458.8030 | www.henkel.com/aerospace

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