Hysol® EA 9309NA

Epoxy Paste Adhesive

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Description

Hysol EA 9309NA consists of a beige translucent paste (Part A) and a red liquid curing agent (Part B). Hysol EA 9309NA is a toughened adhesive ideal for bonding metal, wood, plastics and glass. Bonds are flexible and resist water, salt spray and most common fluids. Its outstanding feature is excellent peel strength to aluminum.

Features

High Peel Strength
Bonds Many Surfaces
Room Temperature Cure
Two Component

Uncured Adhesive Properties

	Part A	Part B	Mixed
Color	Beige	Red	Red
Viscosity @ 77°F	3,000 - 6,000 Poise	0.5 Poise	120 Poise
Brookfield, HBT	Spdl7@20 rpm	Spdl1@60rpm	Spdl4@20 rpm
Viscosity @ 25°C	300 - 600 Pa•s	.05 Pa•s	12 Pa•s
Brookfield, HBT	Spdl7@2.1rad/s	Spdl1@6.3rad/s	Spdl4@2.1rad/s
Density (g/ml)	1.15	1	1.1
Shelf life @ <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).

Mix Ratio	Part A	Part B
By Weight	100	23

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

Pot Life (450 gm mass) 40 minutes

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 1 pound/ 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 12 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 3 - 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 @ 150°F/66°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 3 days @ 77°F/25°C. Adherends are 7075-T_3 Alclad aluminum treated with phosphoric acid anodizing per ASTM D3933.

	Typical Results	
Test Temperature, °F/°C	**psi**	**MPa**
-67/-55	4,000	27.6
77/25	5,000	34.5
180/82	600	4.1

Peel Strength

T Peel strength tested per ASTM D1876 after curing for 3 days @ 77°F/25°C. Adherends are 2024-T_3 Alclad aluminum treated with phosphoric acid anodizing per ASTM D3933.

	Typical Results	
Test Temperature, °F/°C	**lbf/in**	**N/25mm**
77/25	39	173

Specifications

The above values are typical results under ideal conditions. To establish certification values, please refer to the Henkel Aerospace Specification LAS-AS9234 which defines quality control test values, methods and procedures. For a copy of the Henkel Aerospace Specification, contact Henkel's Literature Desk at (510)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 160°F/71°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. User's interested in establishing values and tests for routine QC acceptance should request the Henkel Aerospace Specification (LAS) 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	5,500 psi	37.9 MPa
Tensile Modulus @ 77°F/25°C	300 ksi	2,067 MPa
Elongation at Break,%	10	
Shore D Hardness @ 77°F/25°C	80	
T_g dry (DMTA)	133°F	56°C
T_g wet (DMTA)	129°F	54°C
Shear Modulus @ 77°F/25°C	130 ksi	896 MPa
Poisson's Ratio	0.35	

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

Compressive Strength @ 77°F/25°C	7,000 psi	48.2 MPa
Compressive Modulus @ 77°F/25°C	249 ksi	1,716 MPa

Electrical Properties - tested per ASTM D149, D150.

Dielectric Constant, 1 KHz, 77°F/25°C	4.29
Dissipation Factor, 1 KHz, 77°F/25°C	0.016

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.

Hysol® is a registered trademark of Henkel Corporation.

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