



LOCTITE

Technical Process Bulletin

LOCTITE EA 9377 AERO

Epoxy Paste Adhesive

(KNOWN AS Hysol EA 9377)

INTRODUCTION

LOCTITE EA 9377 AERO is a two-component moldable plastic shim with excellent microcrack resistance under thermal cycling and high compressive strength.

FEATURES

- Resistant to microcracking under 2,000 thermal cycles
- High compressive strength
- Low slump
- Room temperature cure
- Available in 6 oz. barrier type Semkits® for easy dispensing
- Capable of minimum 5 mil shim thickness
- Qualified to BMS 8-338

Uncured Properties

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Gray	Black	Dark Gray
Viscosity @ 77°F	2,200 Poise	890 Poise	
Brookfield, HBT	Spdl 7 @ 20 rpm	Spdl 6 @ 20 rpm	
Viscosity @ 25°C	220 Pa·s	89 Pa·s	
Brookfield, HBT	Spdl 6 @ 2.1 rad/sec	Spdl 5 @ 2.1 rad/sec	
Density (g/ml)	1.55	1.08	1.44
Shelf life			
@ <40°F/4°C	6 months	12 months	
@ <77°F/25°C	3 months	12 months	

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 (100 gram mass) 60 minutes @ 77°F/25°C
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 LOCTITE 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 - 7 days @ 77°F/25°C. 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 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 Bare aluminum.

<u>Test Temperature, °F/°C</u>	<u>Typical Results</u>	
	<u>psi</u>	<u>MPa</u>
-67/-55	2,300	15.8
77/25	2,300	15.8
190/88	2,100	14.5

Physical Performance

Thermal Cycling Performance

Little or no cracking visible to the unaided eye will occur for the following thermal cycling conditions:

- 12 hours of 120°F/49°C condensing humidity
- 1 hour @ -67°F/-55°C
- 400 thermal cycles between -67°F/-55°C and 160°F/71°C at 36 minutes per cycle
- Repeat process 5 times for a total of 2,000 cycles

Shore D Hardness (72 hour cure @ 77°F/25°C) 85





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Compressive Properties - tested using cylindrical specimens 0.5 inch/12.7 mm diameter by 1 inch/25.4mm per ASTM D695.

<u>Test Temperature, °F/°C</u>	<u>Modulus</u>		<u>Strength at 2% Strain</u>	
	<u>ksi</u>	<u>MPa</u>	<u>ksi</u>	<u>MPa</u>
77°F/25°C	904	6,234	18.0	124
190°F/88°C	400	2,759	8.0	55

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.





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Note

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Rev. 7/2013

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