

# LOCTITE EA 9814 AERO Epoxy Paste Adhesive Technical Data Sheet

**INTRODUCTION**

LOCTITE EA 9814 AERO is an intermediate density, fire retardant, one-component epoxy syntactic for use on honeycomb composite parts requiring high compressive strength at temperatures up to 350°F (177°C).

**FEATURES**

- One part structural syntactic
- Intermediate density
- Fire retardant
- Pre-weighed in disposable plastic cartridges
- High compressive strength
- Dual cure system 260°F (127°C) or 350°F (177°C)
- No cell wall separation or cracking due to thermal stresses
- Excellent fluid resistance

**Properties**

Color	Off White
Cured Density	0.75 g/cc
Freeze thaw time	6-8 hours
Work Life at 77°F (25°C)	≥8 hours after freezer thaw
	<24 hours
Shelf Life ≤-20°F (-29°C)	12 months

**Handling Characteristics**

For consistent extrusion rate performance, the following handling recommendation should be performed. Remove frozen cartridges from the freezer and allow the cartridges to thaw at 70-90°F (21-32°C) for 6-8 hours. Recommended extrusion process would be to use a pneumatic hand gun at 80 lbs/in<sup>2</sup> (6 bar) without nozzle.

**Cure Schedule**

Heat the material from room temperature at the rate of 3°F (2°C) per minute to either 260°F (127°C) for 90 minutes or 350°F (177°C) for 60 minutes. Recommend a cool down rate of 3-5°F (2-3°C) per minute to room temperature.

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**Physical Uncured and Cured Test Properties**

Test Property	Cure Condition	Test Condition	Unit	Result
Extrusion Rate (6oz Cartridge without nozzle)	n/a	8 hours at 77°F (25°C) prior to extrusion using 80 lbs/in <sup>2</sup> (6 bar) air pressure	(g/min.)	1348
Vertical Flow (Tested at 30 min.)	n/a	77°F (25°C)	inch (mm)	0.10 (2.54)
		125°F (52°C)		0.13 (3.18)
Cured Density	90 min. at 260°F (127°C)	77°F (25°C)	lbs/ft <sup>3</sup> (g/cc)	47 (0.75)
	60 min. at 350°F (177°C)			
Flammability (Horizontal Self Extinguishing)  Sample Size: 0.5" x 0.5" x 5" (12.7mm x 12.7mm x 127mm).	90 min. at 260°F (127°C)	15 second horizontal ignition	inch (cm)	1.0 (2.5)
	60 min. at 350°F (177°C)	Report Gauge Burn Length		0.9 (2.2)
Fluid Immersion (% Weight Gain)  Sample Size: 0.5 in <sup>3</sup> (12.7 mm <sup>3</sup> )  Sample Conditioning: 24 hours fluid soak at 77°F (25°C)	90 min. at 260°F (127°C)	TT-S-735, Type III Hydrocarbon Fluid	%	0.0
		MIL-PRF-5606 Hydraulic Fluid (Aeroshell Fluid 41)		0.1
		Skydrol LD4		0.2
		Distilled Water		0.1
	60 min. at 350°F (177°C)	TT-S-735, Type III Hydrocarbon Fluid	%	0.0
		MIL-PRF-5606 Hydraulic Fluid (Aeroshell Fluid 41)		0.2
		Skydrol LD4		0.3
		Distilled Water		0.1



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## Mechanical Test Properties

### Tensile Lap Shear Strength Performance

- Test Method per ASTM D1002 (EN2243-1).
- Metal: 2024T-3 Clad, 0.063" (1.6mm) thick.
- Etch: Phosphoric Acid Anodized per ASTM D3933.
- Cured bondline thickness range 9-11 mils.

### Compression Strength Performance

- Test Method per ASTM D695 (ISO 604).
- Block sample dimension: 0.5" x 0.5" x 1.0" (12.7mm x 12.7mm x 2.54mm).
- Sample soak time at elevated test temperature was 10 min. at test temperature prior to testing.

Test Property	Cure Condition	Test Temperature	Unit	Result
Tensile Lap Shear Strength	90 min. at 260°F (127°C)	77°F (25°C)	lbs/in <sup>2</sup> (MPa)	1,882 (13.0)
	60 min. at 350°F (177°C)			1,748 (12.1)
Compression Strength  (Ultimate)	90 min. at 260°F (127°C)	77°F (25°C)	lbs/in <sup>2</sup> (MPa)	15,219 (104.9)
		350°F (177°C)		7,584 (52.3)
	90 min. at 260°F (127°C) + Post Cure 60 min. at 350°F (177°C)	350°F (177°C)	lbs/in <sup>2</sup> (MPa)	8,329 (57.4)
	60 min. at 350°F (177°C)	77°F (25°C)	lbs/in <sup>2</sup> (MPa)	15,365 (105.9)
		350°F (177°C)		8,337 (57.5)
	60 min. at 350°F (177°C) + Post Cure 60 min. at 350°F (177°C)	350°F (177°C)	lbs/in <sup>2</sup> (MPa)	8,540 (58.9)

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**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 epoxy resin 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.

**CAUTION!** This material may cause eye and skin irritation or allergic dermatitis. It contains epoxy resins.

**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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