Technical Data Sheet

LOCTITE® EA E-60HP

December 2020

PRODUCT DESCRIPTION

LOCTITE® EA E-60HP provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (resin)	Pale yellow liquid
Appearance (hardener)	Yellow liquid
Appearance (mixed)	Off-white
Components	Two components - Requires mixing
Viscosity	Medium
Mix Ratio, (by volume) Resin : Hardener	2 : 1
Mix Ratio, (by weight) Resin : Hardener	100 : 50
Cure	Room temperature cure after mixing
Application	Bonding

LOCTITE® EA E-60HP is a two component, toughened, medium viscosity, industrial grade epoxy adhesive with extended working life. Once mixed, LOCTITE® EA E-60HP cures at room temperature to form a tough, off-white bondline and works on a variety of plastic, metal, glass, rubber, wood and ceramic substrates. When fully cured, the epoxy is resistant to a wide range of chemicals and solvents, and acts as an excellent electrical insulator. Typical applications include general purpose industrial applications requiring extended work life for adjusting parts during assembly.

TYPICAL PROPERTIES OF UNCURED MATERIAL

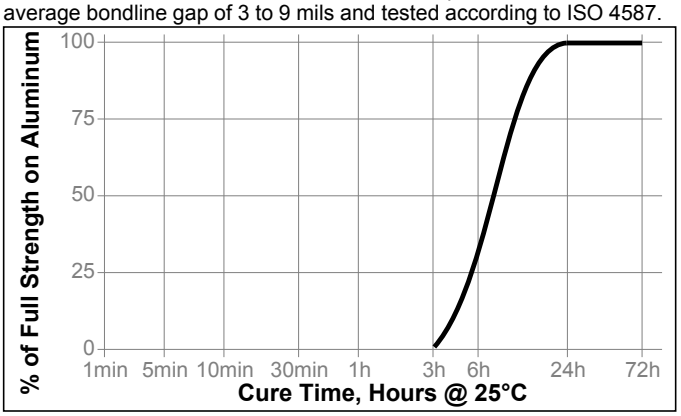
Resin:	
Specific Gravity @ 23 °C	1.0
Viscosity, Brookfield - RVT @ 25 °C, mPa·s (cP): Spindle 7, Speed 20 rpm	67,500
Hardener:	
Specific Gravity @ 23 °C	1.0
Viscosity, Brookfield - RVT @ 25 °C, mPa·s (cP): Spindle 6, Speed 50 rpm	7,000

TYPICAL CURING PERFORMANCE

Working life, @ 23 °C, minutes	60
Tack Free Time, minutes	120

Cure Speed vs. Time

The graph below shows the shear strength developed with time on abraded, acid etched aluminum lap shears with an average bondline gap of 3 to 9 mils and tested according to ISO 4587.



TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 5 days @ 23 °C

Physical Properties		
Glass Transition Temperature (Tg), °C TMA, ISO 11359-2		70
Shore Hardness, ISO 868 , Durometer D		80
Elongation, at break, ISO 527-3, %		9
Tensile Strength, ISO 527-2	N/mm² (psi)	35 (5,100)
Electrical Properties		
Dielectric Breakdown Strength, IEC 60243-1, kV/mm		13
Adhesive Properties		
Lap Shear Strength, ISO 4587:		
Mild Steel (Grit Blasted)	N/mm² (psi)	30 (4,300)
Aluminum (Acid Etched & Abraded)	N/mm² (psi)	30 (4,300)
Aluminum (Anodized)	N/mm² (psi)	18 (2,600)
Stainless Steel	N/mm² (psi)	27 (3,900)
Polycarbonate	N/mm² (psi)	13 (1,900)
Nylon	N/mm² (psi)	1.9 (280)
Wood (Fir)	N/mm² (psi)	12 (1,700)

Block Shear Strength, ISO 13445:

PVC	N/mm²	12
	(psi)	(1,700)
ABS	N/mm²	13
	(psi)	(1,900)
Epoxy	N/mm²	29
	(psi)	(4,200)
Acrylic	N/mm²	1
	(psi)	(150)
Glass	N/mm²	32
	(psi)	(4,600)

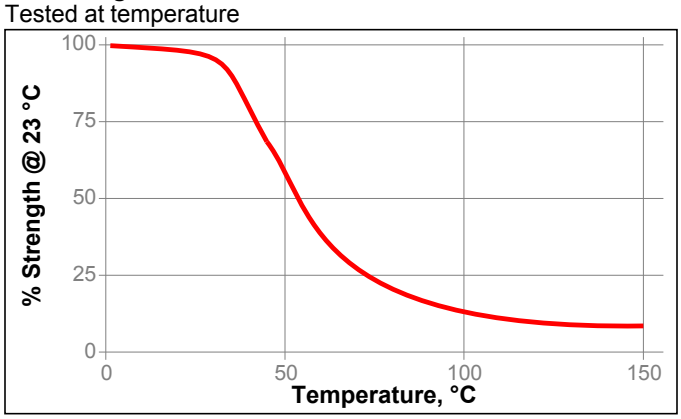
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 12 hours @ 65°C and 4 hours @ 23 °C

Lap Shear Strength, ISO 4587, Aluminum (Acid Etched & Abraded), 3 to 9 mils bondline gap

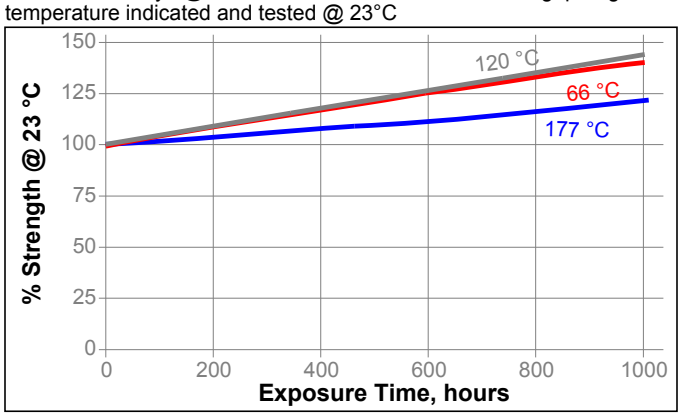
Hot Strength

Tested at temperature



Heat Aging

Cured for 5 days @ 23°C on steel with no induced gap, aged at temperature indicated and tested @ 23°C



Chemical/Solvent Resistance

Cured for 5 days @ 23°C on steel with no induced gap, aged at temperature indicated and tested @ 23°C

		% of initial strength	
Environment	**°C**	**500 h**	**1000 h**
Air	87	---	120
Motor oil (10W30)	87	140	150
Unleaded gasoline	87	100	130
Water/glycol 50/50	87	100	110
Salt fog	23	---	80
95% RH	38	---	120
Condensing Humidity	49	---	95
Water	23	---	95
Acetone	23	75	95
Isopropanol	23	90	110

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions For Use:

1. For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
2. Use gloves to minimize skin contact. DO NOT use solvents for cleaning hands.
3. **Dual Cartridges:** To begin using a new cartridge, remove cartridge cap and dispense a small amount of adhesive, making sure both parts A&B are extruding. Attach nozzle and dispense approximately 25 to 50mm, before applying onto part to be bonded. Partially used cartridges can be stored with the mixing nozzle attached. To reuse, remove and discard old nozzle, attach the new nozzle, dispense approximately 25 to 50mm, before applying onto part to be bonded.
   Hand Mixing: Combine Part A & Part B in the correct ratio and mix thoroughly. Be sure to scrape both the sides and bottom of mixing container. Mix for approximately 15 seconds after uniform color is obtained. Heat build-up during or after mixing is normal. Do not mix quantities greater than 0.02kg as excessive exotherm or heat build up will develop. Mixing smaller amounts will minimize heat build-up.
   Bulk Containers: Normally material is dispensed through volumetric metered mixing equipment, attached to static mix nozzles. It may also be mixed by weight or volume as described above.
4. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made within 60 minutes. Larger quantities and/or higher temperatures will reduce this working time.
6. Join the adhesive coated surfaces and allow to cure. Higher temperatures will speed up curing.
7. Keep assembled parts from moving during cure. Contact

pressure is neccesary. Maximum shear strength is obtained with a 3 to 9 mil bond line. The bond should be allowed to develop full strength before subjecting to any service load.

8. Excessive uncured adhesive can be cleaned up with ketone type solvents.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.
Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Henkel representative.

Product Specification

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate

Please contact Henkel representative for related approval or certificate of this product.

Data Ranges

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23 °C / 50% RH = 23±2 °C / 50 ±5% RH

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer

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