Technical Data Sheet

LOCTITE® EA M-121HP™

October 2020

Product description
LOCTITE® EA M-121HP™ provides the following product characteristics:

Technology	Epoxy
Chemical type	Epoxy
Appearance (resin)	Off-white to beige liquid
Appearance (hardener)	Amber liquid
Appearance (mixed)	Amber-beige
Components	Two components - resin &hardener
Viscosity	Medium
Mix Ratio, (by weight) resin : hardener	100 : 46
Mix Ratio, (by volume) resin : hardener	2 : 1
Cure	Room temperature cure after mixing
Application	Bonding

LOCTITE® EA M-121HP™ is a non-sagging epoxy adhesive which cures at room temperature once mixed, to form a tough, amber-beige bondline with excellent resistance to peel and impact forces. When fully cured, the epoxy offers superior thermal shock resistance, excellent mechanical and electrical properties, and withstands exposure to a wide variety of solvents and chemicals. Typical applications include low stress applications which require high impact and high peel strength. Bonds dissimilar materials including aluminum, steel, and other metals, as well as a variety of plastics and ceramics. Suitable for use in the assembly of **disposable medical devices**.

ISO-10993
LOCTITE® EA M-121HP™ has been tested to Henkel's test protocols based on ISO-10993 biocompatibility standards, as a means to assist in the selection of products for use in the medical device industry.

Typical properties of uncured material

Resin

Specific gravity @ 25°C	1.1
Flash point - see SDS	
Viscosity, Brookfield - RVT, 25°C, mPa·s (cP):	
Spindle 7, speed 50 rpm,	41,000 to 61,000

Hardener

Specific gravity @ 25°C	1.0
Flash point - see SDS	
Viscosity, Brookfield - RVT, 25°C, mPa·s (cP):	
Spindle 5, speed 50 rpm,	2,000 to 4,000

Mixed properties

Specific gravity @ 25°C	1.07

Typical curing performance

Gel time

Gel time @ 100°C°C, seconds	120 to 240

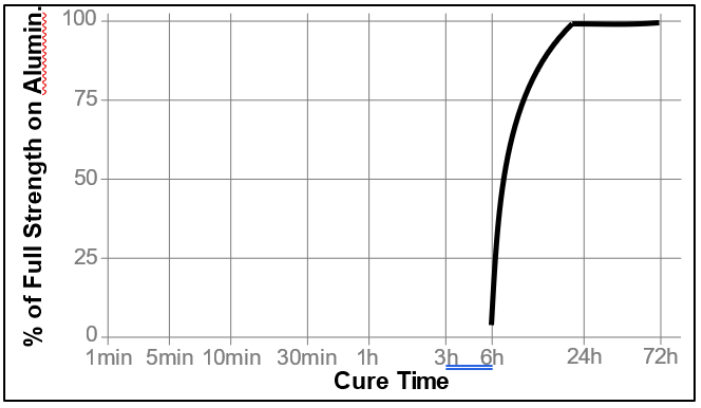
Working life

Working life, minutes	120

Tack free time
Tack free time is the time required to achieve a tack free surface.

Tack free time, (low humidity) minutes	140

Cure speed vs. time
The graph below shows shear strength developed with time on (etched & abraded) lapshears @25°C with an average bondline gap of 0.1 to 0.2 mm and tested according to ISO 4587.



Typical properties of cured material

Cured @ 25°C°C except where noted

Physical properties:

Glass transition temperature, ASTM E 228, °C		90
Elongation , ISO 527-5, %		10
Tensile Strength, ISO 527-2	N/mm² (psi)	5,910 (5,910)
Shore hardness, ISO 868, Durometer D		
Cured @ 22°C for 16 to 18 hours followed by 2 hours @ 65°C		76 to 90

Electrical properties

Dielectric breakdown strength, IEC 60243-1, kV/mm		25.6

Typical performance of cured material

Adhesive properties

Cured @ 65°C for 2 hours

Lap Shear Strength, ISO 4587:

Aluminum, (etched & abraded), 0.13 mm gap	N/mm² (psi)	≥13.8 (≥2,001)

Cured @ 65°C for 12 hours

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm² (psi)	29.4 (4,270)
Aluminum, (etched & abraded), 0.1 to 0.2 mm gap	N/mm² (psi)	33.1 (4,800)
Aluminum, (anodised)	N/mm² (psi)	14.6 (2,120)
Stainless steel	N/mm² (psi)	23.1 (3,350)
Polycarbonate	N/mm² (psi)	7.0 (1,010)
Nylon	N/mm² (psi)	2.3 (330)
Wood (Fir)	N/mm² (psi)	11.3 (1,640)

Block Shear Strength, ISO 13445:

PVC	N/mm² (psi)	11.7 (1,700)
ABS	N/mm² (psi)	7.5 (1,090)
Epoxy glass	N/mm² (psi)	20.1 (2,920)
Acrylic	N/mm² (psi)	1.5 (220)
Glass	N/mm² (psi)	22.7 (3,290)

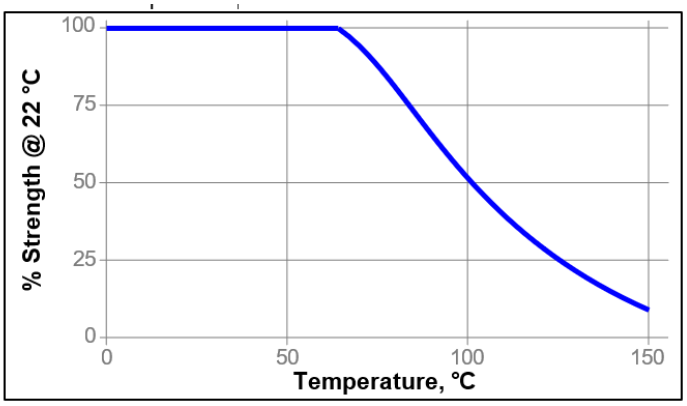
Typical environmental resistance

Cured for 12 hours @ 65°C followed by 4 hours @ 22°C

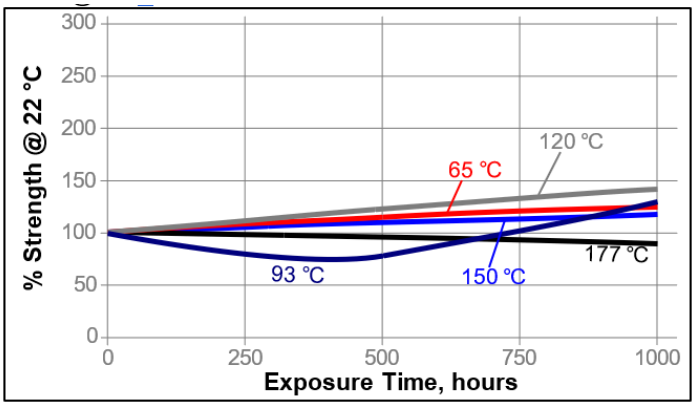
Lap Shear Strength, ISO 4587:

Aluminum, (etched & abraded), 0.1 to 0.2 mm gap

Hot Strength
Tested at temperature



Heat aging
Cured for 5 days @ 22°C, on steel, aged at temperatures indicated, tested @ 22°C



Chemical/solvent resistance
Cured for 5 days @ 22°C, on steel, aged at temperatures indicated, tested @ 22°C

Effects of Sterilization
In general, products similiar in composition to LOCTITE® EA M-121HP™ subjected to standard sterilization methods, such as EtO and Gamma Radiation (25 to 50 kilo Grays cumulative) show excellent bond strength retention.
LOCTITE® EA M-121HP™ maintains bond strength after 1 cycle of steam autoclave. It is recommended that customers test specific parts after subjecting them to the preferred sterilization method. Consult with Loctite® for a product recommendation, if your device will see more than 3 sterilization cycles.

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 Material Safety Data Sheet.

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 use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. If automatic mixing of resin and hardener is desired, attach the mixing nozzle to the end of the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix for approximately 15 seconds sec after uniform color is obtained.
4. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made within 2 hours. Larger quantities and/or higher temperatures will reduce this working time.
6. Join the adhesive coated surfaces and allow to cure at 25°C°C for 24 hours hours for high strength. Heat up to 93°C°C, will speed curing.
7. Keep parts from moving during cure. Contact pressure is neccesary. Maximum shear strength is obtained with a 0.1 to 0.2 mm bond line.
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 package 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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