Technical Data Sheet

LOCTITE® AA H8500™

Known as Loctite H8500
January 2015

PRODUCT DESCRIPTION

LOCTITE® AA H8500™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate
Appearance, Resin (Component A)	Off-white, viscous paste
Appearance, Hardener (Component B)	Black viscous liquid
Appearance (Mixture)	Grey viscous paste[LMS]
Components	Two component - requires mixing
Mix Ratio, by volume - Part A: Part B	10 : 1
Cure	Room temperature cure
Application	Bonding

LOCTITE® AA H8500™ is a thixotropic, two-component, room temperature curing methacrylate adhesive offering superior peel and impact strength on steel and aluminum. LOCTITE® AA H8500™ contains 0.75mm spacer beads to help prevent excessive squeeze-out of adhesive due to over-clamping.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A:

Specific Gravity @ 25 °C 0.98

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):
Cone CP50-1 @ shear rate 50 s^{-1} 8,200

Viscosity, Brookfield - HBD, 25 °C, mPa·s (cP):
Spindle 5, speed 20 rpm, 35,000 to 60,000

Flash Point - See SDS

Part B:

Specific Gravity @ 25 °C 0.96

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):
Cone CP50-1 @ shear rate 50 s^{-1} 8,000

Viscosity, Brookfield - HBD, 25 °C, mPa·s (cP):
Spindle 4, speed 20 rpm, 10,000 to 30,000

Flash Point - See SDS

Mixed:

Specific Gravity @ 25 °C 0.99

Working Time @ 25 °C, minutes (maximum time before assembly):
Steel 25
Aluminium 25
Polyethylene 20

Working life, minutes (Time for mixed viscosity to double) 10

Flash Point - See SDS

TYPICAL CURING PERFORMANCE

Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm² .

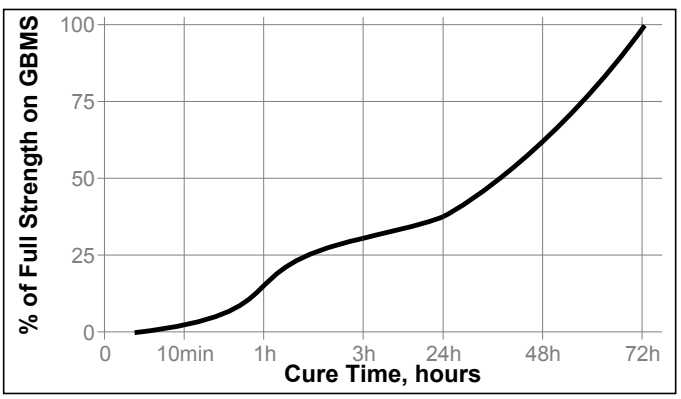
Fixture Time, ISO 4587, minutes:
Grit Blasted Mild Steel 25 to 30
Aluminum 4.5 to 5
Polycarbonate 45 to 50

Peak Exotherm Temperature

Peak Exotherm Temperature, 10 gram mass, minutes:
@ 127 °C 39

Cure Speed vs. Time

The graph below shows the shear strength developed over time at 22 °C / 50 % RH on mild steel (grit blasted) and tested according to ISO 4587.



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Glass Transition Temperature (Tg), ISO 11359-2, °C		98
Coefficient of Thermal Expansion, ISO 11359-2 K^{-1}:		
Pre Tg		98×10^{-06}
Post Tg		258×10^{-06}
Shore Hardness, ISO 868, Durometer D		70
Linear Shrinkage, %		4.4
Volume Shrinkage, %		12
Elongation, at break, ISO 527-2, %		28
Elongation, at yield, ISO 527-2, %		3
Tensile Strength, at yield, ISO 527-2	N/mm² (psi)	15 (2,160)
Tensile Strength, at break, ISO 527-2	N/mm² (psi)	17 (2,430)
Tensile Modulus, ISO 527-2	N/mm² (psi)	1,112 (161,200)

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24 hours @ 25 °C followed by 18 minutes @ 110 °C

Lap Shear Strength, ISO 4587:

Steel	N/mm² (psi)	≥15[LMS] (≥2,175)

Cured for 72 hours @ 22 °C.

Impact Strength, ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	>14
Aluminum (abraded)	11
FRP	>7
Grit Blasted Mild Steel (GBMS) @ -40 °C	>14
FRP @ -40 °C	6

"T" Peel Strength, ISO 11339:

Steel	N/mm (lb/in)	16 (92)
Aluminum	N/mm (lb/in)	9 (51)

Block Shear Strength, ISO 13445:

Ferrite Magnet to Steel	N/mm² (psi)	20 (2,970)

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm² (psi)	26 (3,780)
Aluminum	N/mm² (psi)	15 (2,180)
Aluminum (roughened to 41 rms)	N/mm² (psi)	19 (2,780)
Stainless Steel	N/mm² (psi)	23 (3,410)
Galvanized Steel	N/mm² (psi)	15 (2,210)
FRP	N/mm² (psi)	10 (1,410)
Gelcoat	N/mm² (psi)	6 (850)
Polycarbonate	N/mm² (psi)	3 (450)
PVC	N/mm² (psi)	4 (540)
ABS	N/mm² (psi)	2 (260)
Epoxy	N/mm² (psi)	7 (1,020)
Acrylic	N/mm² (psi)	3 (430)
Glass	N/mm² (psi)	2 (370)

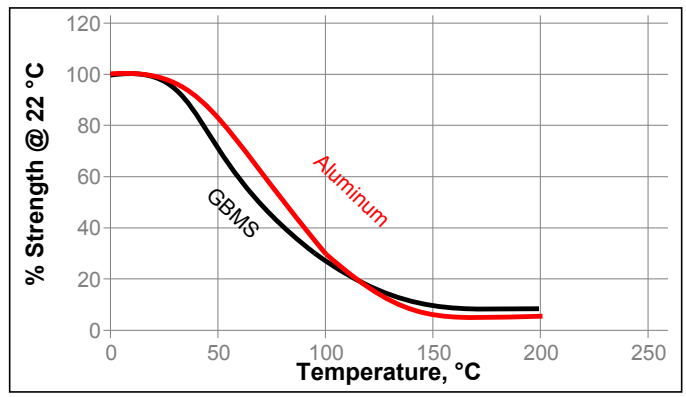
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 72 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)

Hot Strength



Heat Aging

Aged at temperature indicated and tested @ 22 °C

Temperature, °C	% of initial strength	
GBMS	**500h**	**1000h**
100	100	85
177	30	30
205	5	5
Aluminum	**500h**	**1000h**
100	135	100
177	45	40
205	15	15
Galvanized Steel	**500h**	**1000h**
100	100	100
177	25	15

Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 22 °C.

		% of initial strength	
Environment	**°C**	**500 h**	**1000 h**
Air	87	130	120
Motor oil (10W30)	87	85	85
Unleaded gasoline	87	45	30
Water/glycol 50/50	87	90	75
Water	22	100	85
Acetone	22	25	15
Isopropanol	22	100	100
95% RH	40	100	100
100% RH	49	80	75
Salt fog	22	80	80
Salt Fog on Al	38	100	100
Salt Fog on Galvanized Steel	38	75	75
100%RH on Al	49	100	100
100%RH on Galvanized Steel	49	75	75

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.
   Bulk Containers: Normally material is dispensed through volumetric metered mixing equipment, attached to static mix nozzles.
4. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made as soon as possible. Larger quantities and/or higher temperatures will reduce the 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. 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.

Loctite Material Specification[LMS]
LMS dated June 03, 2008. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

Storage
The product is classified as flammable and must be stored in an appropriate manner in compliance with relevant regulations. Do not store near oxidizing agents or combustible materials. Store product in the unopened container in a dry location. Storage information may also be indicated on the product container labelling.
Optimal Storage: 2 °C to 8 °C. Storage below 2 °C or greater than 8 °C can adversely affect product properties.
Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel 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 Technical Service Center or Customer Service Representive.

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

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Reference 0.6