

LOCTITE[®] AA H8510[™]

Known as Loctite H8510
December 2013

PRODUCT DESCRIPTION

LOCTITE[®] AA H8510[™] 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 liquid ^{LMS}
Components	Two component - requires mixing
Mix Ratio, by volume - Part A: Part B	10 : 1
Cure	Room temperature cure
Application	Bonding

LOCTITE[®] AA H8510[™] is a thixotropic, two-component, room temperature curing methacrylate adhesive offering superior peel and impact strength on steel and aluminum. This product is ideal for the assembly and adjustment of larger parts due to its extended work life. LOCTITE[®] AA H8510[™] contains 0.75 mm 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 8,600

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 0.94

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):

Cone CP50-1 @ shear rate 50 s⁻¹ 5,600

Viscosity, Brookfield - HBD, 25 °C, mPa·s (cP):

Spindle 4, speed 20 rpm 20,000 to 40,000

Flash Point - See SDS

Mixed:

Specific Gravity @ 25 °C 0.98
Flash Point - See SDS

Working Time @ 25 °C, minutes
(maximum time before assembly):

Steel 30

Aluminum 30

Polyethylene 35

Working life, minutes 28
(Time for mixed viscosity to double)

TYPICAL CURING PERFORMANCE

Peak Exotherm Temperature

Peak Exotherm Temperature, 10 gram mass, minutes:
@ 128 °C 56

Fixture Time

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

Fixture Time, ISO 4587, minutes:

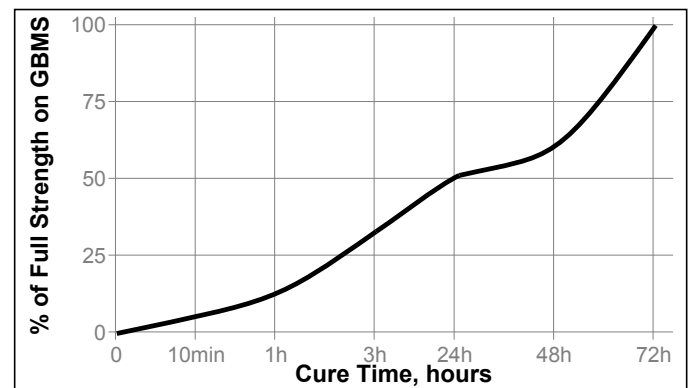
Grit Blasted Mild Steel 25 to 30

Aluminum 5 to 10

Polycarbonate 30 to 35

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:

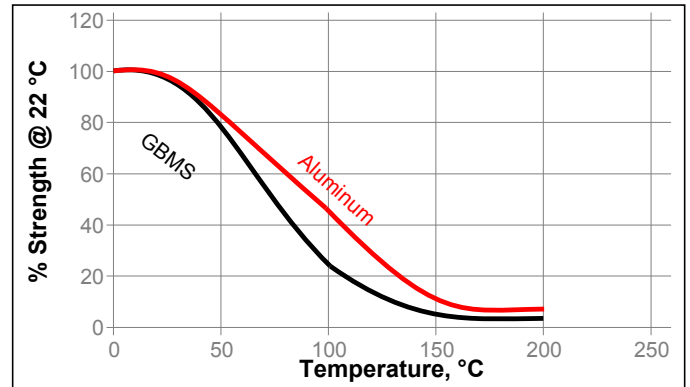
Glass Transition Temperature (Tg), ISO 11359-2, °C	85
Coefficient of Thermal Expansion, ISO 11359-2, K ⁻¹ :	
Pre Tg	107×10 ⁻⁶
Post Tg	341×10 ⁻⁶
Shore Hardness, ISO 868, Durometer D	70
Linear Shrinkage, %	3.7
Volume Shrinkage, %	10.7
Elongation, at break, ISO 527-2, %	41
Elongation, at yield, ISO 527-2, %	39
Tensile Strength, at yield, ISO 527-2	N/mm ² 16 (psi) (2,370)
Tensile Strength, at break, ISO 527-2	N/mm ² 16 (psi) (2,350)
Tensile Modulus, ISO 527-2	N/mm ² 1,141 (psi) (165,500)

Acrylic	N/mm ² 3 (psi) (380)
Glass	N/mm ² 1 (psi) (200)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 72 hours @ 22 °C
Lap Shear Strength, ISO 4587:
Grit Blasted Mild Steel (GBMS)

Hot Strength



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/mm ² ≥15 ^{MS} (psi) (≥2,175)
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Cured for 72 hours @ 22 °C.

Impact Strength, ISO 9653, J:

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

"T" Peel Strength, ISO 11339:

Steel	N/mm (lb/in) 18.3 (104)
Aluminum	N/mm (lb/in) 10.2 (58)

Block Shear Strength, ISO 13445:

Ferrite Magnet to Steel	N/mm ² 20 (psi) (2,850)
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Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm ² 24 (psi) (3,440)
Aluminum	N/mm ² 13 (psi) (1,900)
Stainless Steel	N/mm ² 20 (psi) (2,900)
Galvanized Steel	N/mm ² 14 (psi) (1,980)
FRP	N/mm ² 13 (psi) (1,930)
Gelcoat	N/mm ² 5 (psi) (780)
Polycarbonate	N/mm ² 3 (psi) (460)
PVC	N/mm ² 3 (psi) (510)
ABS	N/mm ² 2 (psi) (270)
Epoxy	N/mm ² 11 (psi) (1,680)

Heat Aging

Aged at temperature indicated and tested @ 22 °C

Temperature, °C	% of initial strength	
	500h	1000h
GBMS		
100	100	100
177	40	20
Aluminum	500h	1000h
100	140	140
177	60	60
205	10	10
Galvanized Steel	500h	1000h
100	135	120
177	15	15

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

Environment	°C	% of initial strength	
		500 h	1000 h
Air	87	120	130
Motor oil (10W30)	87	100	100
Unleaded gasoline	87	50	30
Water/glycol 50/50	87	90	80
Water	22	115	100
Acetone	22	30	15
Isopropanol	22	100	100
95% RH	40	100	100
100% RH	49	100	100
Salt fog	22	100	100
Salt Fog on Al	38	135	120
Salt Fog on Galvanized Steel	38	90	90
100%RH on Al	49	100	100
100%RH on Galvanized Steel	49	95	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 May 29, 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 Representative.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 0.4