

LOCTITE[®] AA H8003[™]

January 2020

PRODUCT DESCRIPTION

LOCTITE[®] AA H8003[™] provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate
Appearance, Resin (Component A)	Amber
Appearance, Hardener (Component B)	Blue
Appearance (Mixture)	Light blue ^{LMS}
Cure	Room temperature cure
Components	Two components - requires mixing
Mix Ratio by volume: Part A: Part B	10 : 1
Product Benefits	<ul style="list-style-type: none"> • Superior impact and peel strength • Little or no surface preparation • Rapid room temperature cure • Excellent environmental resistance • Contains 0.254 mm (10 mil) spacer beads for bond line control
Application	Bonding

LOCTITE[®] AA H8003[™] is a two component, room temperature curing methacrylate adhesive system. LOCTITE[®] AA H8003[™] is designed to have a fast fixture time and excellent bond strength on multiple substrates which includes a variety of metals including galvanized steel, plastics and composites. LOCTITE[®] AA H8003[™] offers superior peel and impact resistance.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A:

Specific Gravity @ 25 °C	0.97
Viscosity, Cone & Plate, 25 °C, mPa·s (cP):	
Cone CP25-2 @ shear rate 20 s ⁻¹	40,000 to 50,000

Flash Point - See SDS

Part B:

Specific Gravity @ 25 °C	1.2
Viscosity, Brookfield - HBD, 25°C, mPa·s (cP):	
Spindle 5, speed 20 rpm	20,000 to 50,000

Flash Point - See SDS

Mixed:

Working Time @ 22 °C, minutes (maximum time before assembly):	
Steel	7
Aluminum	7
HDPE	7

TYPICAL CURING PERFORMANCE

Fixture Time

Fixture time is defined as the time to develop a shear strength of 100 psi

Fixture Time @ 22°C, minutes:	
2024 T3 Bare Aluminum	10 to 12
Aluminum 2024 T3	5 to 15
Cold Rolled Steel (SAE 1010) Grit Blasted	10 to 15
Cold Rolled Steel (SAE 1010)	5 to 15
Galvanized Steel G90	5 to 10
Galvanneal (ASTM A653 CS Type B)	10 to 15

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

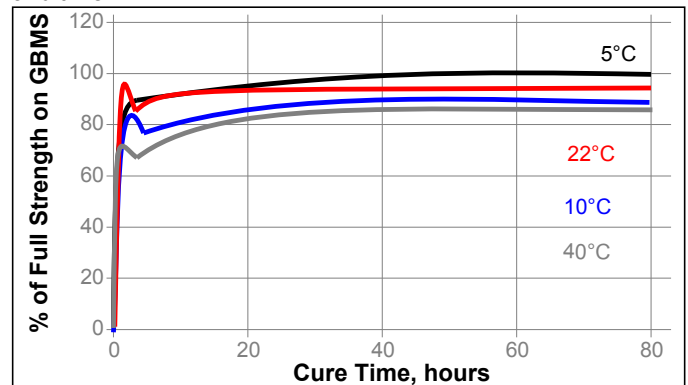
Fixture Time @ 22°C, minutes:	
Aluminum 2024 T3	10 to 15
Cold Rolled Steel (SAE 1010) Grit Blasted	5 to 15
Cold Rolled Steel (SAE 1010)	5 to 10
Galvanized Steel G90	5 to 10
Galvanneal (ASTM A653 CS Type B)	5 to 15

Peak Exotherm Temperature

Peak Exotherm Temperature, 20 gram mass:	
Peak Temperature Time, minutes	8 to 9
Peak Temperature, °C	128

Cure Speed vs. Temperature

Bonded at room temperature, conditioned at noted temperature and time.



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Glass Transition Temperature(Tg), ISO 11359-2, °C	78
Shore Hardness, ISO 868, Durometer D	72
Linear Shrinkage, %	5
Volume Shrinkage, %	15
Coefficient of Thermal Expansion, ISO 11359-2 K ⁻¹ :	
Pre Tg	109.5×10 ⁻⁰⁶
Post Tg	305.5×10 ⁻⁰⁶
Elongation, at break, ISO 527-3, %	7
Tensile Strength, ISO 527-3	N/mm ² 22 (psi) (3,100)
Tensile Modulus, ISO 37	N/mm ² 1,350 (psi) (196,000)

Drop Impact Strength (Tested @ -40°C), ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	13.4
Steel	15.8
Aluminum	18.0
FRP	2.9
Gelcoat	6.0

Drop Impact Strength (Tested @ -20°C), ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	11.9
Steel	13.9
Aluminum	17.0
FRP	3.3
Gelcoat	5.8

"T" Peel Strength, ISO 11339:

Steel	N/mm 2.2 (lb/in) (13)
Aluminum	N/mm 4.3 (lb/in) (24)

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24 hours @ 22 °C / 50% RH

Tensile Lap Shear Strength, :

Aluminum (T3 Bare)	N/mm ² ≥20.5 ^{LMS} (psi) (≥3,000)
Aluminum (6061)	N/mm ² 19.3 (psi) (2,800)
Grit Blasted Mild Steel (GBMS)	N/mm ² 22 (psi) (3,200)
Mild Steel	N/mm ² 23 (psi) (3,300)
Galvanized Steel	N/mm ² 9 (psi) (1,300)
Galvanneal Steel	N/mm ² 21 (psi) (3,000)
Gelcoat	N/mm ² 9 (psi) (1,300)
Epoxy/Glass	N/mm ² 19 (psi) (2,800)

Block Shear Strength, ISO 13445:

Polycarbonate	N/mm ² 11 (psi) (1,600)
PVC	N/mm ² 21 (psi) (3,000)
ABS	N/mm ² 16 (psi) (2,000)
Acrylic	N/mm ² 18 (psi) (2,600)
FRP	N/mm ² 9 (psi) (1,300)

Drop Impact Strength, ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	14.8
Steel	11.4
Aluminum	15.5
FRP	3.3
Gelcoat	6.4

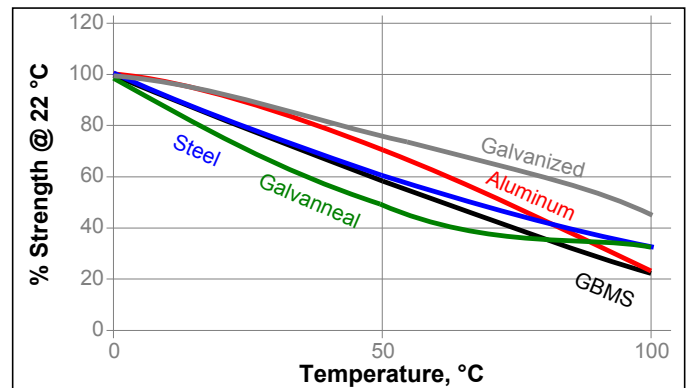
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 24 hours @ 22 °C

Tensile Lap Shear Strength, :

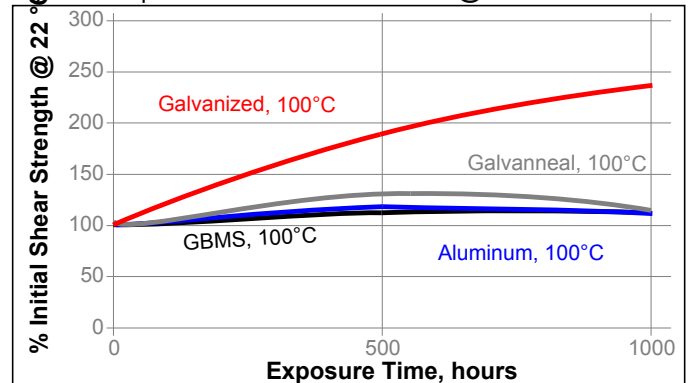
Grit Blasted Mild Steel (GBMS)

Hot Strength



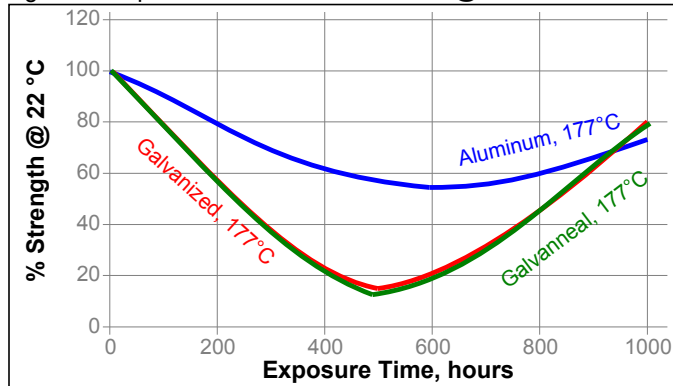
Heat Aging

Aged at temperature indicated and tested @ 22 °C



Heat Aging

Aged at temperature indicated and tested @ 22 °C

**Chemical/Solvent Resistance**

Grit Blasted Mild Steel (GBMS)

Aged under conditions indicated and tested @ 22 °C

Tensile Strength, ISO 527-3

Environment	°C	% of initial strength	
		500 h	1000 h
Air	87	113	106
Motor oil (10W30)	22	98	96
Unleaded gasoline	22	23	9
Water/glycol 50/50	22	91	89
Water	22	98	89
Acetone	22	14	8
Isopropanol	22	93	82
95% RH	40	85	86
100% RH	49	87	83
Salt fog	22		57

Chemical/Solvent Resistance

Galvanneal

Aged under conditions indicated and tested @ 22 °C

Tensile Strength, ISO 527-3

Environment	°C	% of initial strength	
		500 h	1000 h
Air	87	122	112
Motor oil (10W30)	22	102	106
Unleaded gasoline	22	17	9
Water/glycol 50/50	22	100	87
Water	22	104	91
Acetone	22	12	8
Isopropanol	22	96	86
95% RH	40	98	98
100% RH	49	95	
Salt fog	22	79	74

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 20 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 20 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 12, 2019 (Part A) and LMS dated June 5, 2019 (Part B). 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 Loctite 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: 8°C to 28°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 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. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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Reference 0.2