



# LOCTITE® AA H8003™

January 2020

## PRODUCT DESCRIPTION

LOCTITE® AA H8003™ provides the following product characteristics:

|                                     |   |
|-------------------------------------|---|
| <b>Technology</b>                   | Acrylic   |
| Chemical Type                       | Methacrylate  |
| Appearance, Resin (Component A)     | Amber   |
| Appearance, Hardener (Component B)  | Blue  |
| Appearance (Mixture)                | Light blue <sup>LMS</sup>   |
| <b>Cure</b>                         | 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"> <li>• Superior impact and peel strength</li> <li>• Little or no surface preparation</li> <li>• Rapid room temperature cure</li> <li>• Excellent environmental resistance</li> <li>• Contains 0.254 mm (10 mil) spacer beads for bond line control</li> </ul> |
| <b>Application</b>                  | 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 <sup>-1</sup> | 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/mm<sup>2</sup>.

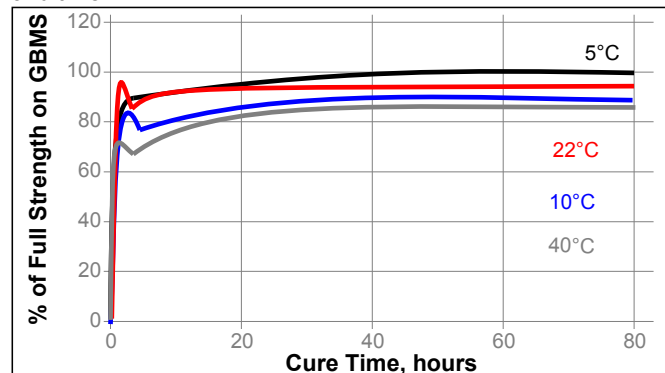
|   |          |
|---|----------|
| Fixture Time @ 22 °C, minutes:            |          |
| Aluminum 2024 T3                          | 10 to 15 |
| Cold Rolled Steel (SAE 1010) Grit Blasted | 5 to 15  |
| Cold Rolled Steel (SAE 1010)              | 5 to 10  |
| Galvanized Steel G90                      | 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)<br>, 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 <sup>-1</sup> : |  |
| Pre Tg  | 109.5×10 <sup>-06</sup>                    |
| Post Tg   | 305.5×10 <sup>-06</sup>                    |
| Elongation, at break, ISO 527-3, %                              | 7  |
| Tensile Strength, ISO 527-3                                     | N/mm <sup>2</sup> 22<br>(psi) (3,100)      |
| Tensile Modulus, ISO 37   | N/mm <sup>2</sup> 1,350<br>(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<br>(lb/in) (13) |
| Aluminum | N/mm 4.3<br>(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 <sup>2</sup> ≥20.5 <sup>LMS</sup><br>(psi) (≥3,000) |
| Aluminum (6061)                | N/mm <sup>2</sup> 19.3<br>(psi) (2,800)                  |
| Grit Blasted Mild Steel (GBMS) | N/mm <sup>2</sup> 22<br>(psi) (3,200)                    |
| Mild Steel                     | N/mm <sup>2</sup> 23<br>(psi) (3,300)                    |
| Galvanized Steel               | N/mm <sup>2</sup> 9<br>(psi) (1,300)                     |
| Galvanneal Steel               | N/mm <sup>2</sup> 21<br>(psi) (3,000)                    |
| Gelcoat                        | N/mm <sup>2</sup> 9<br>(psi) (1,300)                     |
| Epoxy/Glass                    | N/mm <sup>2</sup> 19<br>(psi) (2,800)                    |

Block Shear Strength, ISO 13445:

|               |                                       |
|---------------|---------------------------------------|
| Polycarbonate | N/mm <sup>2</sup> 11<br>(psi) (1,600) |
| PVC           | N/mm <sup>2</sup> 21<br>(psi) (3,000) |
| ABS           | N/mm <sup>2</sup> 16<br>(psi) (2,000) |
| Acrylic       | N/mm <sup>2</sup> 18<br>(psi) (2,600) |
| FRP           | N/mm <sup>2</sup> 9<br>(psi) (1,300)  |

Drop Impact Strength, ISO 9653, J:

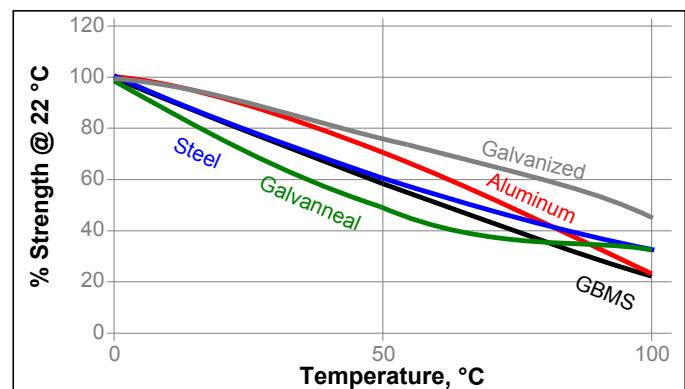
|                                |      |
|--------------------------------|------|
| Grit Blasted Mild Steel (GBMS) | 14.8 |
| Steel                          | 11.4 |
| Aluminum                       | 15.5 |
| FRP                            | 3.3  |
| Gelcoat                        | 6.4  |

**TYPICAL ENVIRONMENTAL RESISTANCE**

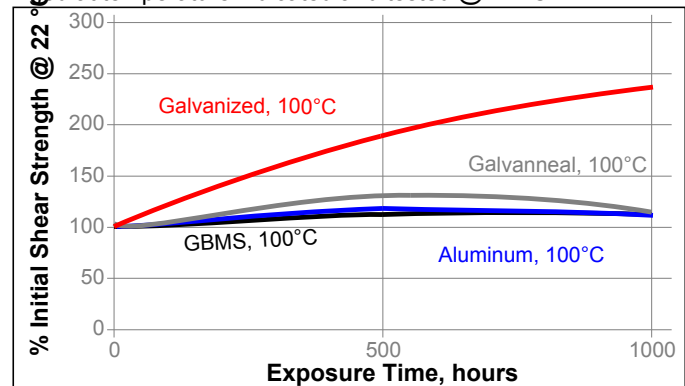
Cured for 24 hours @ 22 °C

Tensile Lap Shear Strength, :

Grit Blasted Mild Steel (GBMS)

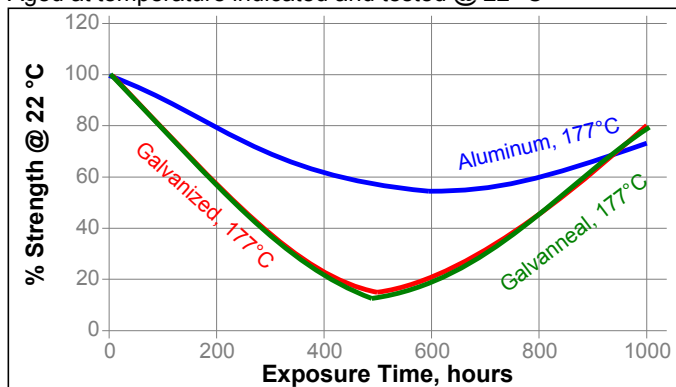
**Hot Strength****Heat Aging**

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:**

- For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
- Use gloves to minimize skin contact. DO NOT use solvents for cleaning hands.
- 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.
- For maximum bond strength apply adhesive evenly to both surfaces to be joined.
- Application to the substrates should be made as soon as possible. Larger quantities and/or higher temperatures will reduce the working time.
- Join the adhesive coated surfaces and allow to cure. Higher temperatures will speed up curing.
- Keep assembled parts from moving during cure. The bond should be allowed to develop full strength before subjecting to any service load.
- Excessive uncured adhesive can be cleaned up with ketone type solvents.

**Loctite Material Specification<sup>LMS</sup>**

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