



# LOCTITE<sup>®</sup> HF8600<sup>™</sup>

February 2009

## PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> HF8600<sup>™</sup> provides the following product characteristics:

<b>Technology</b>	Acrylic
<b>Chemical Type</b>	Methacrylate
<b>Appearance (Part A)</b>	Clear gel
<b>Appearance (Part B)</b>	Blue gel
<b>Appearance (Mixed)</b>	Light blue <sup>MS</sup>
<b>Cure</b>	Room temperature cure
<b>Components</b>	Two component - requires mixing
<b>Mix Ratio, by volume - Part A: Part B</b>	2 : 1
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• Weight &amp; Cost reduction</li> <li>• Improved durability</li> <li>• Improved appearance</li> <li>• Bond dissimilar substrates</li> </ul>
<b>Application</b>	Bonding

LOCTITE<sup>®</sup> HF8600<sup>™</sup> is a toughened, two component acrylic adhesive system designed with low halogen content for structural bonding and weld/rivet reduction. It is well suited for metal bonding applications where shock and impact resistance is required. The product cures very rapidly forming tough, resilient bonds. Once statically mixed, the two component acrylic cures at room temperature. Cure times can be reduced with the addition of mild heat to the bonded assemblies. LOCTITE<sup>®</sup> HF8600<sup>™</sup> is formulated with 0.127 mm spacers pre-dispersed within the adhesive to ensure that the adhesive bond area has adequate gap for optimal shock and impact performance. Typical applications include structural bonding of plastic and metal components that must withstand vibrations and impacts such as in portable devices and specialty vehicle markets.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Part A:

Specific Gravity @ 25 °C 0.99  
 Viscosity, Cone & Plate, 25 °C, mPa·s (cP):  
 Cone CP50-1 @ shear rate 50 s<sup>-1</sup> 19,200

Flash Point - See MSDS

### Part B:

Specific Gravity @ 25 °C 0.97  
 Viscosity, Cone & Plate, 25 °C, mPa·s (cP):  
 Cone CP50-1 @ shear rate 50 s<sup>-1</sup> 15,200

Flash Point - See MSDS

### Mixed:

Specific Gravity @ 25 °C 0.98  
 Viscosity, Cone & Plate, 25 °C, mPa·s (cP):  
 Cone CP50-1 @ shear rate 50 s<sup>-1</sup> 25,600

Working Time @ 25 °C, minutes  
 (maximum time before assembly):  
 Steel 13  
 Aluminium 13  
 Polyethylene 13

Working life, minutes 3.8  
 (Time for mixed viscosity to double)

Flash Point - See MSDS

## TYPICAL CURING PERFORMANCE

### Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm<sup>2</sup>.

Fixture Time, ISO 4587, minutes:  
 Mild Steel 5 to 10

### Peak Exotherm Temperature

Peak Exotherm Temperature, 10 gram mass:  
 Peak Temperature Time, minutes 15  
 Peak Temperature, °C 159

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties:

Glass Transition Temperature (T<sub>g</sub>) 65  
 , ISO 11359-2, °C  
 Coefficient of Thermal Expansion, ISO 11359-2 K<sup>-1</sup>:  
 Pre T<sub>g</sub> 84×10<sup>-06</sup>  
 Post T<sub>g</sub> 173×10<sup>-06</sup>  
 Shore Hardness, ISO 868, Durometer D 69  
 Linear Shrinkage, ISO 1675 % 5  
 Volume Shrinkage, ISO 1675 % 14  
 Elongation, at break, ISO 527-2, % 13  
 Elongation, at yield, ISO 527-2, % 7  
 Tensile Strength, at yield, ISO 527-2 N/mm<sup>2</sup> 17  
 (psi) (2,410)  
 Tensile Strength, at break, ISO 527-2 N/mm<sup>2</sup> 15  
 (psi) (2,200)  
 Tensile Modulus, ISO 527-2 N/mm<sup>2</sup> 1,120  
 (psi) (162,390)

**TYPICAL PERFORMANCE OF CURED MATERIAL**

**Adhesive Properties**

Cured for 24 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Steel (ground)	N/mm <sup>2</sup>	≥10.33 <sup>LMS</sup>
	(psi)	(≥1,497)

Cured for 72 hours @ 22 °C.

Impact Strength, ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	26
Aluminum (abraded)	2
Grit Blasted Mild Steel (GBMS) @ -40 °C	29

"T" Peel Strength, ISO 11339:

Steel	N/mm	14
	(lb/in)	(80)
Aluminum	N/mm	5
	(lb/in)	(30)

Block Shear Strength, ISO 13445:

Ferrite Magnet to Steel	N/mm <sup>2</sup>	15
	(psi)	(2,130)
Glass	N/mm <sup>2</sup>	8
	(psi)	(1,230)
Acrylic	N/mm <sup>2</sup>	2.5
	(psi)	(370)
Epoxy	N/mm <sup>2</sup>	4
	(psi)	(620)
ABS	N/mm <sup>2</sup>	1.5
	(psi)	(220)
PVC	N/mm <sup>2</sup>	6
	(psi)	(830)
Polycarbonate	N/mm <sup>2</sup>	2
	(psi)	(250)

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm <sup>2</sup>	15
	(psi)	(2,120)
Aluminum	N/mm <sup>2</sup>	17
	(psi)	(2,430)
Stainless Steel	N/mm <sup>2</sup>	16
	(psi)	(2,300)
Galvanized Steel	N/mm <sup>2</sup>	3
	(psi)	(400)
FRP	N/mm <sup>2</sup>	7
	(psi)	(1,035)
Gelcoat	N/mm <sup>2</sup>	7
	(psi)	(1,035)

**TYPICAL ENVIRONMENTAL RESISTANCE**

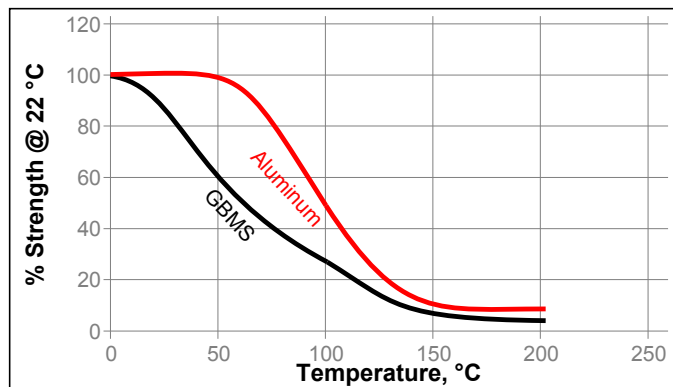
Cured for 72 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)

**Hot Strength**

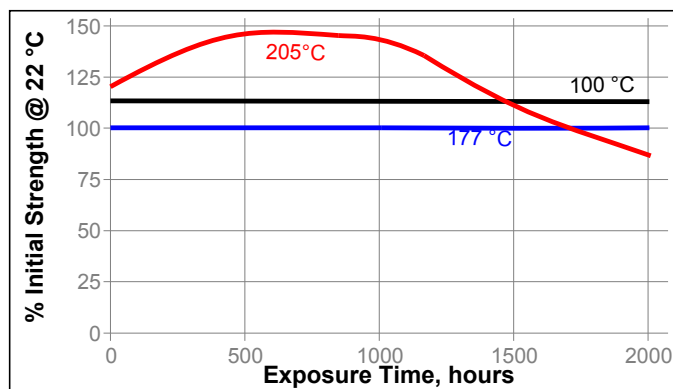
On: Galvanized Steel



**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

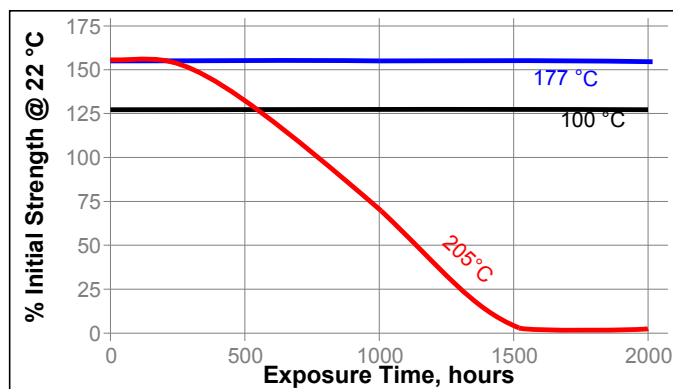
On: Grit Blasted Mild Steel (GBMS)



**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

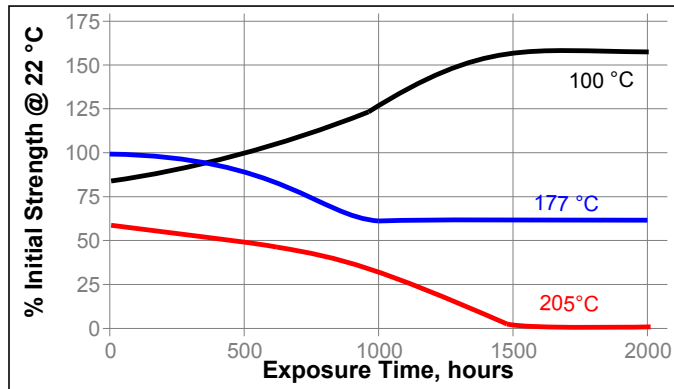
On: Aluminum



**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

On: Galvanized Steel

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22°C.

On: Grit Blasted Mild Steel (GBMS)

Environment	°C	% of initial strength	
		500 h	1000 h
Air	87	115	105
Motor oil (10W30)	87	55	55
Unleaded gasoline	87	10	10
Water/glycol 50/50	87	50	15
Water	22	85	85
Acetone	22	25	25
Isopropanol	22	100	100
Salt fog	35	95	80
Condensing Humidity	49	80	80
95% RH	40	100	100

**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 (MSDS).**

**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 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.

- 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 May 21, 2008 (Part A) and LMS dated April 03, 2008 (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: 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**

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Reference 0.0