

## LOCTITE® EA 3463

Known as LOCTITE® Fixmaster® Metal Magic Steel™  
November 2014

### PRODUCT DESCRIPTION

LOCTITE® EA 3463 provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Chemical Type</b>	Epoxy
<b>Appearance (uncured)</b>	Metallic black <sup>LMS</sup>
<b>Appearance (form)</b>	Stick
<b>Components</b>	Two components - requires mixing
<b>Cure</b>	Room temperature cure
<b>Application</b>	Bonding
<b>Specific Benefits</b>	<ul style="list-style-type: none"> <li>• Cures under water and will adhere to most damp surfaces</li> <li>• Adheres to most types of clean surfaces</li> <li>• Cures in 10 minutes for fast repairs</li> <li>• Epoxy adhesive stick applies like putty and cures to a steel-like finish</li> </ul>

LOCTITE® EA 3463 is a versatile, dual component, easy to use, steel filled epoxy repair putty. It is applied like a putty and when cured it has a high compressive strength and good adhesion to most surfaces. This product stops leaks in pipes and tanks, fills oversized bolt holes, smoothes welds, and repairs non-structural defects in castings holes in tanks. This product is typically used in applications with an operating range of -30 °C to 120 °C.

### TYPICAL PROPERTIES OF UNCURED MATERIAL

Coverage	40 cm <sup>2</sup> @ 6 mm thick per tube (16 in <sup>2</sup> @ 0.25 in thick per tube)
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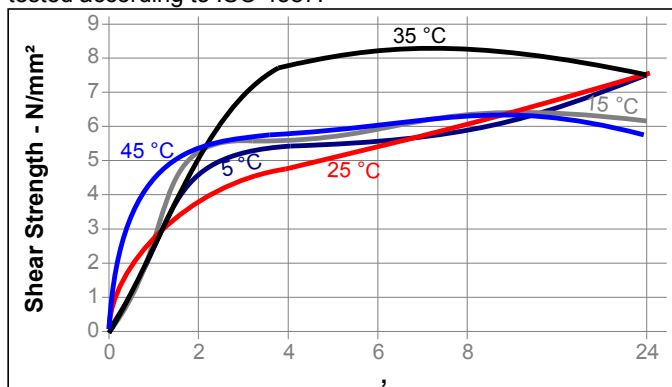
### TYPICAL CURING PERFORMANCE

#### Curing Properties

Cure Time @ 25 °C, minutes	10
Gel Time @ 25 °C, minutes	2.5 to 3.5
Working Time @ 25 °C, minutes	2.5 to 5 <sup>LMS</sup>

### Cure Speed vs. Temperature

The graph below shows the shear strength developed with time on grit blasted steel lap shears at different temperatures and tested according to ISO 4587.



### TYPICAL PROPERTIES OF CURED MATERIAL

#### Physical Properties:

Shore Hardness, ISO 868, Shore D	>70 <sup>LMS</sup>
Abrasion Resistance, ASTM D4060: mg 1 Kg load, CS-10 wheels, Weight of Material Lost	200
Coefficient of Thermal Conductivity ASTM F 433, W/(m·K)	1.016
Glass Transition Temperature ISO 11359-2, °C	54
Coefficient of Thermal Expansion, ISO 11359-2, K <sup>-1</sup> :	
Below Tg	29×10 <sup>-6</sup>
Above Tg	115×10 <sup>-6</sup>
Compressive Strength, ISO 604	N/mm <sup>2</sup> 50 (psi) (7,200)
Compressive Modulus, ISO 604	N/mm <sup>2</sup> 6,120 (psi) (887,700)
Tensile Strength, ISO 527-2	N/mm <sup>2</sup> 18.8 (psi) (2,730)
Tensile Modulus, ISO 527-2	N/mm <sup>2</sup> 105 (psi) (15,000)
Elongation at break, %	0.3
Flexural strength, ASTM D790	N/mm <sup>2</sup> 37 (psi) (5,430)
Flexural modulus, ASTM D790	N/mm <sup>2</sup> 7,820 (psi) (1,134,200)

#### Electrical Properties:

Volume Resistivity, IEC 60093, ohm-cm	46×10 <sup>12</sup>
Surface Resistivity, IEC 60093, ohms	110×10 <sup>12</sup>

### TYPICAL PERFORMANCE OF CURED MATERIAL



Lap Shear Strength :

Grit Blasted Mild Steel (GBMS)

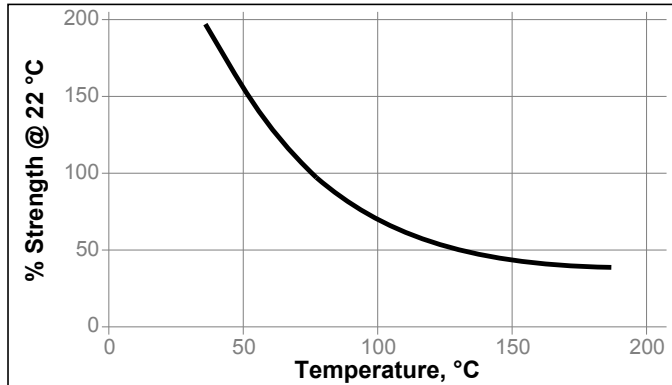
 $N/mm^2 \geq 3.45^{LMS}$   
 (psi)  $(\geq 500)$ 
**TYPICAL ENVIRONMENTAL RESISTANCE**

Lap Shear Strength :

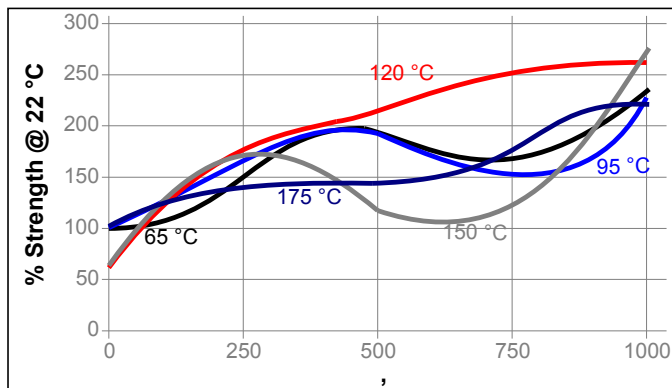
Grit Blasted Mild Steel (GBMS)

**Hot Strength**

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 23 °C

**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**

- CAUTION:** Do not apply to surfaces above 66 °C (150F).
- Apply to clean and dry surface for best strength. LOCTITE® EA 3463 can be applied to wet surfaces, but bond strength will be lower.
- For maximum adhesion, clean and sand surface.

4. Use gloves; do not mix with bare hands.

5. Cut required amount of material from stick. Remove clear plastic wrapper from cut section.

6. To mix, first twist the material to produce a spiral pattern of resin and hardener. Next, knead material for 2-3 minutes or until a uniform color is achieved.

7. Firmly apply for patch, repair or bonding.

8. For a smooth finish, wet a cloth or gloved finger with water and smooth.

**Technical Tips for Working With Epoxies**

Working time and cure depends on temperature and mass:

- The higher the temperature, the faster the cure.
- The larger the mass of material, the faster the cure.

To speed the cure of epoxies at low temperatures:

- Store epoxy at room temperature.
- Pre-heat repair surface until warm to the touch.

To slow the cure of epoxies at high temperatures:

- Mix epoxy in small masses to prevent rapid curing.
- Cool resin/hardener component(s).

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

LMS dated January 22, 2002. 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**

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage: 8 °C to 21 °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 Corporation 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 Henkel representative.

**Conversions**

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

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Reference 1

