



# LOCTITE<sup>®</sup> Fixmaster<sup>®</sup> Aluminum Liquid

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## PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> Fixmaster<sup>®</sup> Aluminum Liquid provides the following product characteristics:

<b>Technology</b>	Epoxy
Appearance (Resin)	Grey Liquid
Appearance (Hardener)	Blue liquid
Appearance (Mixed)	Grey <sup>LMS</sup>
Components	Two components - requires mixing
Mix Ratio, by volume - Resin : Hardener	5 : 1
Mix Ratio, by weight - Resin : Hardener	9 : 1
<b>Cure</b>	Room temperature cure
<b>Application</b>	Bonding
Specific Benefit	<ul style="list-style-type: none"> <li>• Castable liquid - repairs hard to reach areas</li> <li>• Rebuilds worn parts fast - limits downtime</li> <li>• Forms a non-rusting aluminum-like finish</li> <li>• Superior adhesion - bonds well to all metal substrates</li> </ul>

LOCTITE<sup>®</sup> Fixmaster<sup>®</sup> Aluminum Liquid is a two-part pourable epoxy system heavily reinforced with aluminum powder. It is used to cast and repair aluminum parts. Applications include filling or leveling equipment, making aluminum forming dies, casting aluminum parts and pouring molds, parts and fixtures. LOCTITE<sup>®</sup> Fixmaster<sup>®</sup> Aluminum Liquid has high thermal conductivity and is suitable for use in potting applications requiring this characteristic. This product is typically used in applications with an operating range of -30 °C to 95 °C (-20F to 200F).

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Resin:

Density @ 23 °C, g/cm<sup>3</sup> 1.7

Flash Point - See MSDS

### Hardener:

Density @ 23 °C, g/cm<sup>3</sup> 0.973

Flash Point - See MSDS

### Mixed:

Density @ 23 °C, g/cm<sup>3</sup> 1.56

Coverage 278 cm<sup>3</sup> per 0.45 kg  
(17 in<sup>3</sup> per 1 lb)

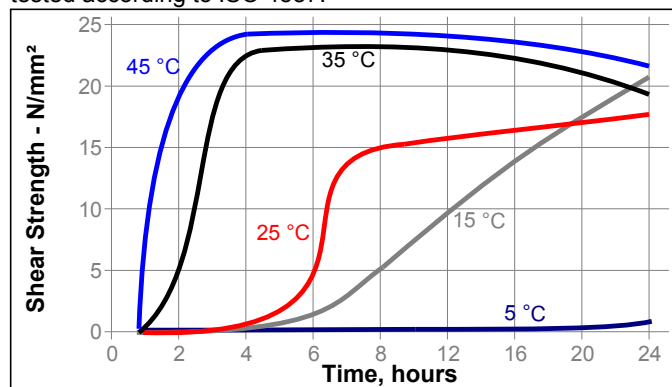
## TYPICAL CURING PERFORMANCE

### Curing Properties

Cure Time @ 25 °C, hours	6
Gel Time @ 25 °C, minutes	45 to 55 <sup>LMS</sup>
Working life, minutes	20

### 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

Cured @ 25 °C except where noted

### Physical Properties:

Abrasion Resistance, ASTM D4060: mg 1 Kg load, CS-10 wheels, Weight of Material Lost	91
Shore Hardness, ISO 868, Durometer A	83
Flexural strength, ASTM D790	N/mm <sup>2</sup> 79 (psi) (11,500)
Flexural modulus, ASTM D790	N/mm <sup>2</sup> 3,810 (psi) (552,400)
Compressive Strength, ISO 604	N/mm <sup>2</sup> 79 (psi) (11,500)
Compressive Modulus, ISO 604	N/mm <sup>2</sup> 3,725 (psi) (540,000)
Tensile Strength, ISO 527-2	N/mm <sup>2</sup> 32.5 (psi) (4,720)
Tensile Modulus, ISO 527-2	N/mm <sup>2</sup> 10,480 (psi) (1,520,000)
Elongation, ISO 527-2, %	0.56



Coefficient of Thermal Conductivity ASTM F 433, W/(m·K)	0.89
Glass Transition Temperature, ASTM E 1640, °C	63
Coefficient of Thermal Expansion, ISO 11359-2 K <sup>-1</sup> :	
Below Tg	40×10 <sup>-06</sup>
Above Tg	125×10 <sup>-06</sup>

**Electrical Properties:**

Volume Resistivity, IEC 60093, ohm-cm	580×10 <sup>12</sup>
Surface Resistivity, IEC 60093, ohms	389×10 <sup>09</sup>

**TYPICAL PERFORMANCE OF CURED MATERIAL****Shear Strength**

Lap Shear Strength, ISO 4587:	
Grit Blasted Mild Steel (GBMS)	N/mm <sup>2</sup> 18.4 (psi) (2,675)

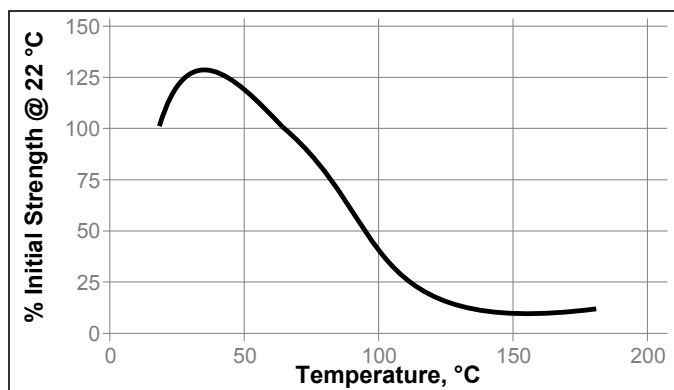
**TYPICAL ENVIRONMENTAL RESISTANCE**

Cured for 72 hours @ 21 °C

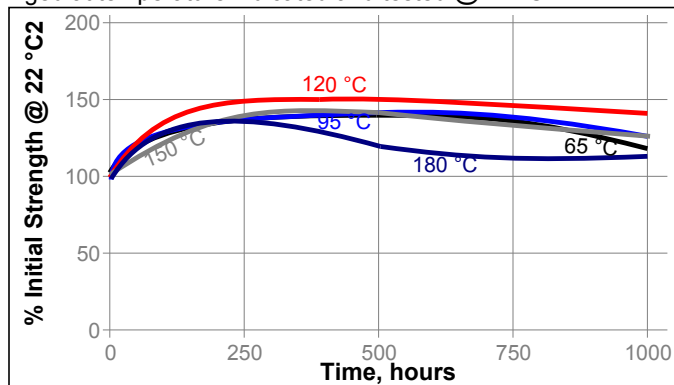
Lap Shear Strength, ISO 4587:	
Grit Blasted Mild Steel (GBMS)	

**Hot Strength**

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °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 Material Safety Data Sheet (MSDS).**

**Directions for use:**

1. Thoroughly clean and abrade surfaces (grit blast if possible), finally clean with Loctite® ODC Free Cleaner with wipe or other suitable solvent that does not leave residue (**Note:** A mold release agent should be used on surfaces where adhesion is not desired).
2. Mix 5 parts resin to 1 part hardener by volume (9 to 1 by weight), or mix entire kit by adding hardener contents to resin container.
3. Mix thoroughly until a uniform color is obtained. Be sure to mix along the sides and bottom.
4. Pour mixed material into prepared area.
5. At 25°C, the working time is 20 minutes and functional cure time is 6 hours.

**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 November 21, 2000 (Resin) and LMS dated May 21, 2001 (Hardener). 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**

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 Technical Service Center or Customer Service Representative.

**Conversions**

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

**Disclaimer****Note:**

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