

## LOCTITE® EA 3450™

May 2014

### PRODUCT DESCRIPTION

LOCTITE® EA 3450™ provides the following product characteristics:

<b>Technology</b>	Epoxy
Chemical Type (Resin)	Epoxy
Chemical Type (Hardener)	Epoxy
Appearance (Resin)	Black thixotropic paste
Appearance (Hardener)	White thick paste
Appearance (Mixture)	Metallic gray
Components	Two component - requires mixing
Mix Ratio, by volume - Resin : Hardener	1 : 1
Mix Ratio, by weight - Resin : Hardener	1 : 1
<b>Cure</b>	Room temperature cure after mixing
<b>Application</b>	Bonding

LOCTITE® EA 3450™ is a two component epoxy adhesive which cures rapidly at room temperature after mixing. It is a metal bonding adhesive which develops high strength. The gap filling properties make this adhesive system suitable for rough and poorly fitting surfaces made from metal, ceramic, rigid plastics or wood. Applications include bonding aluminum window frames and GRP panels.

### TYPICAL PROPERTIES OF UNCURED MATERIAL

#### Resin:

Specific Gravity @ 25 °C 1.7

Casson Viscosity @ 25 °C, Pa·s Plate-plate 25

Flash Point - See SDS

#### Hardener:

Specific Gravity @ 25 °C 1.8

Casson Viscosity @ 25 °C, Pa·s Plate-plate 40

Flash Point - See SDS

#### Mixed:

Pot life @ 25 °C, 20 gram mass, ISO 9514, minutes 5

### 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>.

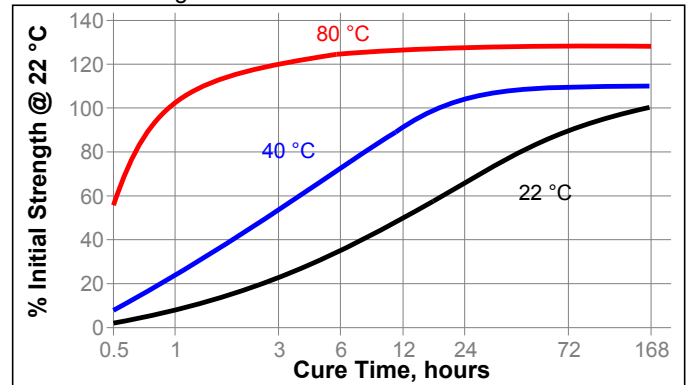
Fixture Time, ISO 4587, minutes:

Steel (grit blasted)

15

#### Cure Speed vs. Temperature

The rate of cure will depend on the ambient 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 68

Glass Transition Temperature, ISO 11359-2, °C 37

Coefficient of Thermal Expansion, K<sup>-1</sup>:

Below Tg

53×10<sup>-06</sup>

Above Tg

160×10<sup>-06</sup>

**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive Properties**

After 1 week @ 22 °C

**Shear Strength**

Lap Shear Strength, :

Mild steel	N/mm <sup>2</sup> 21 (psi) (3,070)
Grit Blasted Mild Steel (GBMS)	N/mm <sup>2</sup> 25 (psi) (3,560)
Aluminum	N/mm <sup>2</sup> 11 (psi) (1,650)
Aluminum (Gritblasted)	N/mm <sup>2</sup> 21 (psi) (3,050)
Polycarbonate	N/mm <sup>2</sup> 5 (psi) (740)
PVC	N/mm <sup>2</sup> 2 (psi) (290)
Nylon	N/mm <sup>2</sup> 3 (psi) (440)
ABS	N/mm <sup>2</sup> 2 (psi) (280)
Wood (Beech)	N/mm <sup>2</sup> 11 (psi) (1,610)

**TYPICAL ENVIRONMENTAL RESISTANCE**

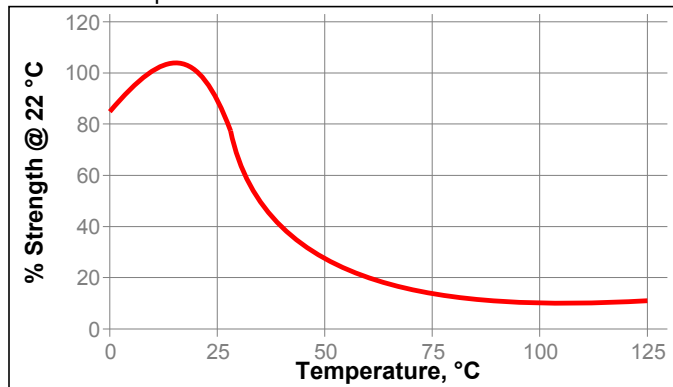
Cured for 1 week @ 22 °C

Lap Shear Strength, ISO 4587:

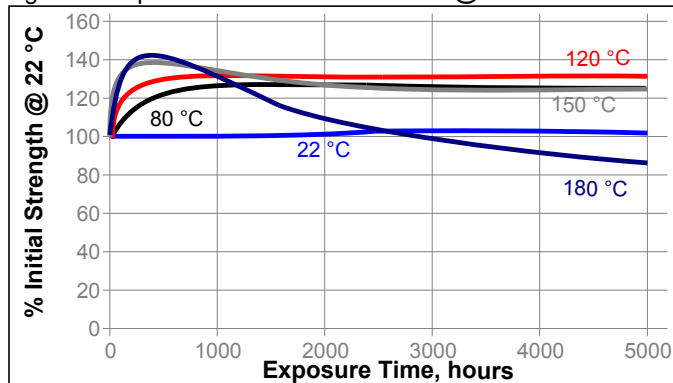
Grit Blasted Mild Steel (GBMS)

**Hot Strength**

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C



Cured for 1 week @ 22 °C

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22 °C.

Environment	°C	% of initial strength			
		100 h	1000 h	3000 h	5000 h
Motor oil	87	130	130	130	130
Unleaded gasoline	22	110	95	95	95
Water/glycol 50/50	87	40	25	20	15
Acetone	22	90	95	95	95
Isopropanol	22	105	95	95	95
Ethanol	22	95	90	90	90
Water	22	110	95	85	75
Water	60	80	40	40	40
Water	90	35	35	35	35
98% RH, 40°C	40	110	55	45	35

**GENERAL INFORMATION**

For safe handling information on this product, consult the Safety Data Sheet (SDS).

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.

**Directions for use:**

- For best performance part surfaces should be clean and free of grease.
- For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
- Dual Cartridges:** To use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. If automatic mixing of resin and hardener is desired, attach the mixing nozzle to the end of the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix for approximately 15 seconds after uniform color is obtained.  
**Bulk Containers:** Mix thoroughly by weight or volume in the proportions specified in Product Description section. Mix vigorously, approximately 15 seconds after uniform color is obtained.
- For maximum bond strength apply adhesive evenly to both surfaces to be joined.
- Application to the substrates should be made within 20 minutes. Larger quantities and/or higher temperatures will reduce this working time.
- Join the adhesive coated surfaces and allow to cure at 25 °C for 24 hours for high strength. Heat up to 93 °C, will speed curing.
- Keep parts from moving during cure. Contact pressure is necessary. Maximum shear strength is obtained with a 0.1 to 0.2 mm bond line.

8. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
9. After use and before adhesive hardens mixing and dispensing equipment should be cleaned with hot soapy water.

### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

### 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

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

### 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.

**In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:**

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

**In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:**

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. 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.

**In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:**

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

### Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

### Reference 0.0