

## LOCTITE® EA 9502™

Known as Hysol® 9502™  
August 2014

### PRODUCT DESCRIPTION

LOCTITE® EA 9502™ provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Chemical Type</b>	Epoxy
<b>Cure</b>	Heat cure
<b>Appearance</b>	Dark grey opaque paste
<b>Components</b>	One-component
<b>Application</b>	Bonding
<b>Maximum Gap</b>	3.0 mm

LOCTITE® EA 9502™ is a single component heat curing epoxy adhesive. It has excellent chemical and solvent resistance and is capable of being used in high operating temperature environments. Its viscosity characteristics ensure large gap filling and sag resistance properties as well as being suitable for a wide variety of substrates.

### TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.35 to 1.44
Casson Viscosity @ 25 °C, mPa·s (cP):	
Cone & Plate Rheometer	17,000 to 40,000

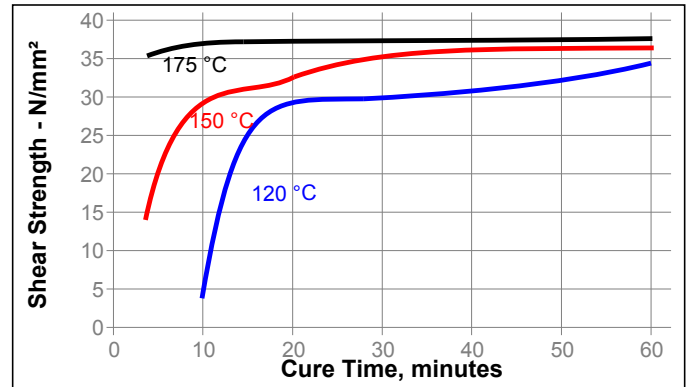
Flash Point - See SDS

### TYPICAL CURING PERFORMANCE

LOCTITE® EA 9502™ cures when exposed to appropriate levels of heat. Recommended conditions for curing are exposure of the bond line to temperatures at or above 120 °C, (typically 30 minutes @ 120 °C or 15 minutes @ 150 °C). Rate of cure and final strength will depend on the residence time at the cure temperature so cure schedule should be confirmed with actual production parts and equipment.

### Cure Speed vs. Temperature

The following graph shows the shear strength developed with time at different cure temperatures. In practice, total oven time will be longer to allow for heat up period. Shear strength is measured on grit blasted mild steel (GBMS) lapshears with 25.4 mm overlap and 0.05 mm bond gap tested at @ 22 °C according to ISO 4587.



### Differential Scanning Calorimetry

Delta H, J/g ≤300

### TYPICAL PROPERTIES OF CURED MATERIAL

1.2 mm thick samples cured for 30 minutes @ 150 °C

#### Physical Properties :

Glass Transition Temperature, ASTM E 1640, °C	147
Coefficient of Thermal Expansion ISO 11359-1 µm/m°C:	
Temperature Range: 36 °C to 120 °C	58
Temperature Range: 139 °C to 200 °C	180
Coefficient of Thermal Conductivity, ISO 8302, W/(m-K)	0.3

### TYPICAL PERFORMANCE OF CURED MATERIAL

Cured for 30 minutes @ 150 °C, tested at 22 °C. (0.05 mm bond gap)

#### Lap Shear Strength , ISO 4587:

Mild Steel (grit blasted)	N/mm² 35 (psi) (5,080)
Stainless Steel	N/mm² 25 (psi) (3,620)
Zinc dichromate	N/mm² 20 (psi) (2,900)
Aluminum (abraded) (Silicon Carbide Paper, A166 grit, P400A grade)	N/mm² 25 (psi) (3,620)
Aluminum (etched in acidic ferric sulphate)	N/mm² 30 (psi) (4,350)
Brass	N/mm² 20 (psi) (2,900)
Galvanized Steel (Hot Dipped)	N/mm² 11 (psi) (1,595)

IZOD Impact Resistance , ISO 9653, J/m<sup>2</sup> :  
Mild steel (grit blasted) 6

180° Rigid Peel Strength ISO 11339:  
Mild steel (grit blasted) N/mm 3.75  
(lb/in) (33)

Cured for 60 minutes @ 120 °C  
Lap Shear Strength ISO 4587:  
GRP (Polyester resin matrix) N/mm<sup>2</sup> 2.2  
(psi) (320)  
Glass Fiber Reinforced Epoxy N/mm<sup>2</sup> 19.5  
(psi) (2,830)

**Chemical/Solvent Resistance**

Immersed in conditions indicated and tested at 22 °C.

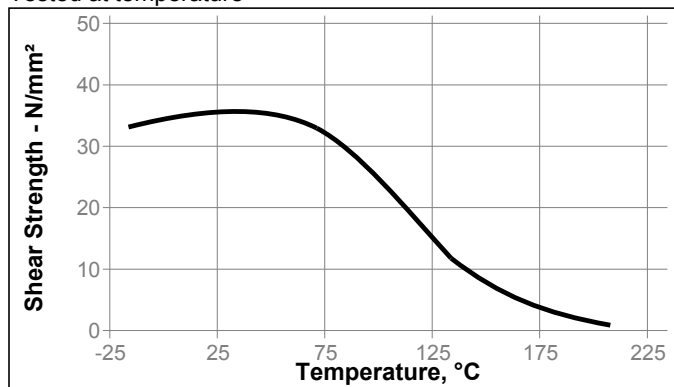
Environment	°C	% of initial strength			
		100 h	500 h	1000 h	3000 h
Motor oil	22	100	100	91	87
Unleaded gasoline	22	97	95	90	89
50 % Water Glycol	87	81	57	50	32
4% Sodium Hydroxide / Water	22	98	82	79	79
98% RH	40	90	90	79	64
Water	60	83	72	66	63
Water	90	86	58	63	62
Acetone	22	100	100	94	92
Acetic Acid, 10%	22	100	94	88	56
Salt water solution, 7.5%	22	100	94	91	91

**TYPICAL ENVIRONMENTAL RESISTANCE**

Cured for 30 minutes @ 150 °C (0.05 mm bond gap).  
Lap Shear Strength , ISO 4587:  
Mild steel (grit blasted)

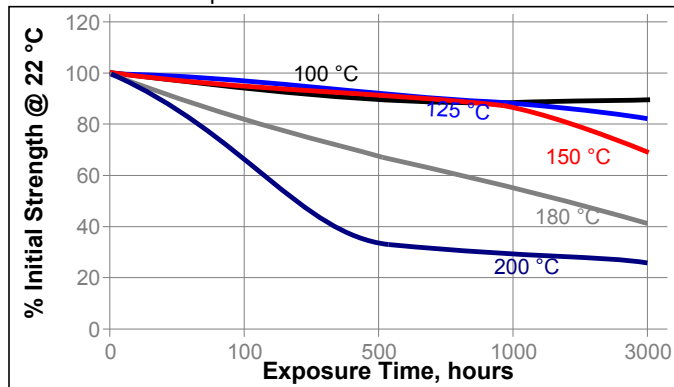
**Hot Strength**

Tested at temperature



**Heat Aging**

Stored in air at temperatures indicated and tested at 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. For best performance surfaces for bonding should be clean, dry and free of grease. For high strength structural bonds, special surface treatments can increase the bond strength and durability.
2. Product can be applied directly from the cartridge by dispensing through the nozzle supplied.
3. It is recommended that this product is not cured in large quantities as excessive heat build-up and uncontrolled exothermal runaway can occur. Curing smaller quantities will minimize the heat build-up.
4. For maximum bond strength apply adhesive evenly to the surface to be bonded. Parts should be assembled immediately after adhesive has been applied.
5. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
6. Cure adhesive as recommended in section 'Typical Cure Performance'. Some additional fillet may form due to lowering of product viscosity with temperature.
7. Keep the assembled parts from moving during cure. The joint should be allowed to develop full strength before subjecting to any service loads.
8. After use and before adhesive hardens, mixing and application equipment should be cleaned with hot soapy water.

**PRODUCT SPECIFICATION**

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: 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 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**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{kV/mm} \times 25.4 = \text{V/mil}$

$\text{mm} / 25.4 = \text{inches}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N/mm} \times 5.71 = \text{lb/in}$

$\text{N/mm}^2 \times 145 = \text{psi}$

$\text{MPa} = \text{N/mm}^2$

$\text{MPa} \times 145 = \text{psi}$

$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$

$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$

$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$

$\text{mPa}\cdot\text{s} = \text{cP}$

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Reference 0.1