

# LOCTITE STYCAST ES 4512HF

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## PRODUCT DESCRIPTION

LOCTITE STYCAST ES 4512HF provides the following product characteristics:

<b>Technology</b>	Epoxy
Appearance, Resin (Component A)	Black
Appearance, Hardener (Component B)	white
Components	Two components - requires mixing
Mixing Ratio, by volume Component A: Component B	100 : 106
Mixing Ratio, by weight Component A: Component B	100 : 100
Product Benefits	<ul style="list-style-type: none"> <li>• Non-conductive</li> <li>• Room temperature cure</li> <li>• Halogen free</li> </ul>
<b>Application</b>	Potting and Bonding

LOCTITE STYCAST ES 4512HF epoxy system is designed for potting electronic devices.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Part A Properties :

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 2 rpm	184,000
Spindle 7, speed 20 rpm	80,000
Filler Content, %	50
Solids Content, %	100
Density @ 25°C, g/cm <sup>3</sup>	1.57
Flash Point - See SDS	

### Part B Properties :

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 5, speed 10 rpm	11,000
Filler Content, %	60
Solids Content, %	100
Density @ 25°C, g/cm <sup>3</sup>	1.48
Flash Point - See SDS	

### Mixed Properties :

Density @ 25°C, g/cm <sup>3</sup>	1.55
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### Miscellaneous - Hysol®:

Pot Life, 300 gm mass, @ 25 °C, minutes	80
Gel Time @ 25 °C, hours	5

## TYPICAL CURING PERFORMANCE Recommended Cure

36 to 48 hours @ 25°C

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties :

Coefficient of Thermal Expansion , ASTM D3418:	
Below Tg, ppm/°C	39.7
Above Tg, ppm/°C	177
Glass Transition Temperature, ASTM D3418, °C	40
Linear Shrinkage, %	1
Hardness, Shore D	88
Water Absorption, %:	
24 hours @ 25°C in water	0.13
Peak Exotherm Temp, °C	30

### Electrical Properties:

Volume Resistivity, Ω·cm	3.82×10 <sup>18</sup>
Surface Resistivity, Ω	8.12×10 <sup>17</sup>
Dielectric Constant :	
100 Hz	4.029
1 KHz	3.913
1 MHz	3.666

## TYPICAL PERFORMANCE OF CURED MATERIAL

### Miscellaneous:

Tensile Strength	N/mm <sup>2</sup>	30
	(psi)	(4,470)
Flexural Strength	N/mm <sup>2</sup>	55
	(psi)	(7,820)

## GENERAL INFORMATION

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

**DIRECTIONS FOR USE**

1. Complete cleaning of the substrates should be performed to remove contamination such as oxide layers, dust, moisture, salt and oils which can cause poor adhesion or corrosion in a bonded part.
2. Accurately weigh resin and hardener into a clean container in the recommended ratio. Weighing apparatus having an accuracy in proportion to the amounts being weighed should be used.
3. Blend components by hand, using a kneading motion, for 2 to 3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture.
4. If possible, power mix for an additional 2 to 3 minutes. Avoid high mixing speeds. This can entrap excessive amounts of air. It can also cause overheating of the mixture, resulting in reduced working life.
5. Apply adhesive to all surfaces to be bonded and join together.
6. In most applications only contact pressure is required.

**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 in original, tightly covered containers in clean, dry areas. Storage information may be indicated on the product container labeling.

**Optimal Storage : 25 °C**

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**

(°C x 1.8) + 32 = °F  
 kV/mm x 25.4 = V/mil  
 mm / 25.4 = inches  
 N x 0.225 = lb  
 N/mm x 5.71 = lb/in  
 psi x 145 = N/mm<sup>2</sup>  
 MPa = N/mm<sup>2</sup>  
 N·m x 8.851 = lb·in  
 N·m x 0.738 = lb·ft  
 N·mm x 0.142 = oz·in  
 mPa·s = cP

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