



# HYSOL<sup>®</sup> ES1000<sup>™</sup>

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## PRODUCT DESCRIPTION

HYSOL<sup>®</sup> ES1000<sup>™</sup> provides the following product characteristics:

<b>Technology</b>	Epoxy
Appearance (Part A)	Black
Appearance (Part B)	Tan
Appearance (cured)	Black
Components	Two component - requires mixing
Mix Ratio, by volume - Part A: Part B	1 : 1
Mix Ratio, by weight - Part A: Part B	100 : 90
<b>Cure</b>	Room temperature cure
<b>Application</b>	Potting and Encapsulating

HYSOL<sup>®</sup> ES1000<sup>™</sup> is a two-component, long pot life, casting system with excellent handling properties. This low cost, flexible system is filled with a non-abrasive filler for machine metering/dispensing. This material has good thermal shock resistance and low exotherm, making it suitable for encapsulation of various components and modules.

## UL Classification

**Classified by Underwriters Laboratories Inc.<sup>®</sup>** UL-94 "Test for Flammability of Plastic Materials" and meets the requirements of 94HB in a 3.3 mm cross section.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Part A Properties

Density, @ 25 °C, g/cm <sup>3</sup>	1.6
Filler Content, %	50
Viscosity @ 25 °C, cP:	
Spindle 7, speed 20 rpm	45,000

### Part B Properties

Density, @ 25 °C, g/cm <sup>3</sup>	1.45
Filler Content, %	50
Viscosity @ 25 °C, cP:	
Spindle 6, speed 20 rpm	9,000

### Mixed Properties

Density, @ 25 °C, g/cm <sup>3</sup>	1.57
Filler Content, %	51
Peak Exotherm Temperature, °C:	
200 g mass	36
Pot Life @ 25 °C, minutes:	
200 g mass	230
500 g mass	180
1,000 g mass	135
Viscosity @ 25 °C, cP:	
Spindle 5, speed 2 rpm	25,000

## TYPICAL CURING PERFORMANCE

### Recommended Curing Conditions

36 to 48 hours @ 25 °C (Recommended cure)  
3 hours @ 60 °C (Alternate cure)

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties:

Glass Transition Temperature, °C	20
Coefficient of Thermal Expansion, ppm/°C:	
Pre Tg (Alpha 1)	95
Post Tg (Alpha 2)	235
Coefficient of Thermal Conductivity, W/(m·K)	0.42
Linear Shrinkage, %	0.53
Shore Hardness, Durometer D	75
24 Hour Water Moisture Absorption, %	0.76
Izod Impact Strength, N/mm of notch	0.05
Tensile Elongation, %	14
Tensile Strength, psi	2,250
Compressive Strength, psi	10,500

### Electrical Properties:

Dielectric Strength, 10 mils thickness, volts/mil	1,100
Volume Resistivity, ohm/cm @ 25°C	2×10 <sup>13</sup>
Volume Resistivity, ohm/cm @ 105°C	4×10 <sup>9</sup>
Surface Resistivity, ohms @ 25°C	1×10 <sup>14</sup>
Surface Resistivity, ohms @ 105°C	2×10 <sup>11</sup>
Dielectric Constant / Dissipation Factor @ 25°C:	
100 Hz	5.7 / 0.12
1 kHz	4.9 / 0.007
10 kHz	4.4 / 0.063
Dielectric Constant / Dissipation Factor @ 105°C:	
100 Hz	20.0 / 4.36
1 kHz	11.8 / 0.974
10 kHz	8.6 / 0.104

## GENERAL INFORMATION

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

### 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.

Note: Before using this product please purge approximately 30 ml. of material prior to application. Discard purged material in accordance with the Material Safety Data Sheet. A video instruction is available upon request.



**Storage**

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

**Optimal Storage: 20 °C to 30 °C. Storage below 20 °C or greater than 30 °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**

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

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

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

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

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

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

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

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

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

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

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

**Note**

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Reference 1.2