

# THERMOSET® ES-121 LV EPOXY ENCAPSULANT

## Technical Data Sheet

Thermoset® ES-121 LV (Low Viscosity) epoxy encapsulant is a black, two-component system designed specifically for high voltage, automotive ignition coils, where excellent adhesion to segmented bobbins is critical.

### Features and Benefits

**Low Viscosity:** maintains low viscosity for complete and void-free encapsulation.

**Environmentally Resistant:** provides excellent resistance to thermal shock.

**High Temperature Electrical Performance:** developed specifically for electrical stability at high temperature.

### Application

**Mixing:** Preheat Thermoset ES-121 LV resin to 80-90°C. Preheat Thermoset ES-121 hardener to 30-50°C. Thoroughly mix resin and hardener together using automatic meter/mix/dispense equipment. Resin and hardener should be mixed at a ratio of 100 parts of resin to 29 parts of hardener, by weight.

**Processing:** Preheat ignition coils to 90-110°C for 2-3 hours. Using automatic meter/mix/dispense equipment, introduce mixed Thermoset ES-121 LV encapsulant system into coils under a vacuum of 1-3 torr. After dispense is complete, maintain the filled coils at 1-3 torr vacuum for 10-60 seconds.

**Curing:** Cure encapsulant using one of the following cure schedules:

- 2.5 hours at 90°C followed by 2.5 hours at 140°C
- 2 hours at 90°C, followed by 2 hours at 110°C, followed by 2 hours at 140°C

In special circumstances where conditions do not permit the use of either cure schedule, alternate curing cycles may be determined by consultation with Parker Lord.

**Cleanup:** Disposable containers and utensils are recommended when working with epoxies. However, when disposable materials are impractical, uncured encapsulant can be removed by cleaning equipment with solvent. Solvent-cleaned utensils should be thoroughly dried before reuse; any remaining solvent can contaminate the next mixture.

### Shelf Life/Storage

Shelf life of each component is one year when stored at 25°C in original, unopened container.

### Typical Properties\*

|                           | ES-121 LV Resin   | ES-121 Hardener | Mixed               |
|---------------------------|-------------------|-----------------|---------------------|
| Appearance                | Black Paste       | Amber Liquid    | Black, Thick Liquid |
| Viscosity, cP             | 125,000<br>@ 60°C | 100<br>@ 25°C   | 7000<br>@ 25°C      |
| Specific Gravity          | 1.83              | 1.17            | 1.63                |
| Gel Time, minutes @ 100°C | –                 | –               | 70                  |
| Working Life, day @ 25°C  | –                 | –               | 1                   |

\*Data is typical and not to be used for specification purposes.

## Typical Cured Properties\*

|                                                               |                     |
|---------------------------------------------------------------|---------------------|
| Coefficient of Linear Thermal Expansion, ppm/°C<br>ASTM D 696 |                     |
| alpha 1                                                       | 40                  |
| alpha 2                                                       | 129                 |
| Glass Transition Temperature, °C<br>by TMA                    | 145                 |
| Hardness<br>Shore D, ASTM D 2240                              | 90                  |
| Storage Modulus, GPa                                          | 2                   |
| Volume Resistivity, ohm-cm @ 25°C<br>ASTM D 257               | $>1 \times 10^{14}$ |
| Dielectric Strength, kV/mm (V/mil)<br>ASTM D 149              | 30 (762)            |
| Dielectric Constant @ 25°C<br>1 MHz, ASTM D 150               | <4                  |
| Dissipation Factor @ 25°C<br>1 MHz, ASTM D 150                | <0.5                |

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Before using this or any Parker Lord product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

Verify Volatile Organic Compounds (VOC) requirements with the applicable local, regional and state air quality authorities before importing, selling or using this product. VOC rules, thresholds and reporting obligations vary by jurisdiction; compliance is the responsibility of the importer/seller/owner.

*For industrial/commercial use only.* Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

Parker Lord  
**Engineered Materials Group**  
 111 LORD Drive  
 Cary, NC 27511-7923  
 USA  
 phone +1 877 275-5673  
[www.parker.com/APS](http://www.parker.com/APS)

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