



## Technical Data Sheet EL116L

### Description

EL116L is a very low viscosity, semi-flexible polyurethane resin system exhibiting high electrical strength, and low shrinkage. The system has been designed for encapsulating and potting of delicate electronic components requiring environmental protection, heat transfer and flame retardancy.

The combination of properties and the ease of use of the material will lend itself to a wide range of applications. The standard colour is Black but other colours are available on request.

### Features

High electrical insulating characteristics  
Non-toxic  
Flame retardant to UL94-VO  
Very low viscosity  
Low embedment stress  
RoHS & WEEE Compliant

### Specification

Property	Resin	Hardener	Mixed
Colour	Black	Brown	Black
Specific Gravity g/ml	1.73	1.21	1.61
Viscosity m.Pa.s @ 25°C	1250	200	950

### Mix Ratio by Weight

Mix Ratio by Volume	4.7: 1
Usable life	3.3: 1
Gel time	30 Minutes (100g @ 25°C)
	60 Minutes (100g @ 25°C)

### Cure Schedule

Minimum cure	Full cure
24 hours @ 20°C	1 week
4 hours @ 60°C	4 hours
2 hour @ 80°C	2 hours

The above are typical values and will vary depending on the cured mass and application. Hotter temperatures may be used for faster cure but will result in higher post cure shrinkage and higher cure exotherm.

Experimentation and testing is suggested to avoid side effects.

For maximum properties a post cure may be required - call Robnor Technical Service Department for advice.

### Typical Properties

Operating temperature range	-40 to +130°C continuous service (application & geometry dependent)
Water absorption	0.5% (30 days @ 25°C)
Flame retardant	Yes (approvable to UL94 VO)
Shore A hardness	80
Compressive strength	Flexible
Thermal conductivity	0.60 W/m. K
Coefficient of thermal expansion	75-100 ppm/°C
Weight loss	1.95% (168hrs @ 130°C)
Peak Exotherm (250g @ 20°C)	45
Shrinkage % (Volume)	0.5
Volume Resistivity	15 <sup>11</sup> ohm.cm
Surface Resistivity	16 <sup>10</sup> Ohm
Dielectric strength	16 kV/mm
Heat Deflection	Flexible
Loss Tangent @ 50 Hz	0.04
Permittivity @ 50 Hz	3.8
Comparative Tracking Index	>600
Elongation at Break %	~50

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**Packaging**

EL116L is available in bulk, kit and twinpack form.

**Availability:**

Available through [sales@robnor.co.uk](mailto:sales@robnor.co.uk)

**Twinpacks**

Twinpacks are pre-weighed resin and hardener components contained in a tough flexible film, separated by a removable clip and rail.

Once the clip and rail is removed the resin and hardener is thoroughly mixed within the bag and is immediately ready for use.

Mixing will normally take 2 minutes for EL116L due to the low viscosity; but pay special attention to the corners.

Twinpacks are ideal for small to medium production runs, prototyping and on-site or field use.

The twinpack weight/volume may also be tailored to a specific size on request.

For further details please visit [www.robnor.co.uk](http://www.robnor.co.uk)

**Bulk Material**

EL116L is a filled system and formulated to avoid sedimentation.

However, if sediment is found after storage, this must be re-dispersed in the original container before being used.

Failure to do so may result in defective product.

Long-term sedimentation will be aggravated by storage above 25°C and should be avoided.

Light sediment may be re-dispersed by carefully warming (to avoid distortion of the clip and rail) and kneading the pack; or if in bulk or kit form gently mixing with a paddle or spatula.

In bulk or kit form evacuation may be necessary for best results.

Avoid breathing vapours produced by this process.

**Kits**

In kit form, resin and hardener are provided in separate containers to the correct ratio.

In most cases, pour the hardener into the larger resin container and use it as a mixing vessel.

Stir well using an appropriate mixer until homogeneous.

Note: Incomplete mixing will be characterised by erratic or partially incomplete cure even after extended time periods.

**Cleaning**

All equipment contaminated with mixed material should be cleaned before the material has hardened.

Robnor Resins TS130 is a suitable non-flammable cleaning agent, although other solvents may be found suitable.

TS130 will also remove cured material provided it is allowed to soak for a number of hours.

**Storage and Shelf Life**

Material stored in the original unopened containers under cool dry condition between 15° and 35°C will have a shelf life of at least one-year.

Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

**Health and Safety**

Polyurethane resin systems may cause sensitisation by skin contact or inhalation may be corrosive, harmful or toxic.

It is therefore strongly recommended that skin and eye contact is avoided by the using of appropriate personal protective equipment; such as gloves, safety glasses or goggles and overalls.

Wash any contamination from the skin immediately and thoroughly and do not eat, smoke or drink in the working vicinity.

Under normal working conditions a good source of ventilation is adequate, however if the material is heated, or where vapour levels are likely to exceed the occupational exposure limits appropriate respiratory protection must be worn. Local exhaust ventilation (LEV) may be required especially for curing ovens or where large volumes of material are curing.

The above is given as a guide only; please refer to RL/HL116L Health and Safety data or our Technical Service Department for individual/specific advice.

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