

ROBNOR RESINS

DATASHEET FOR ROBNOR POLYURETHANE

EL171C

This material is a halogen free, flame retardant, flexible potting resin for light electrical applications. It is specifically designed for low-cost encapsulation and cable joints. It exhibits good adhesion to a wide range of substrates. The standard colours are Black and Grey.

METHOD OF USE

Twinpacks

Twinpacks contain evacuated resin and are ready for use immediately after mixing. See separate mixing instructions.

Bulk Material

The resin has been formulated to minimise sedimentation. Any sediment which may have occurred resulting from long time storage should be dispersed either by rolling the can or stirring with a broad bladed spatula. This operation should be carried out, if necessary, BEFORE removal of any material from the can. Long-term sedimentation will be aggravated by storage at high temperatures and this should be avoided.

The resin is supplied after being evacuated and care should be taken when mixing with hardener not to stir in large amounts of air. If this is unavoidable, the mixed resin and hardener should be re-evacuated before use.

Mixing and dispensing machinery is available from Robnor Resins which will mix resin and hardener in the correct proportions without any risk of introducing entrapped air.

Kits

In kit form, resin and hardener are provided in separate containers to the correct ratio. In most cases, mixing is effected by simply pouring the hardener into the resin can which is then used as the mixing vessel.

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

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Characteristics of Resin: RL171C

| Property | Value | Unit | Standard |
|------------------|---------------|-------------|-----------------|
| Colour | Black or Grey | — | RTM : 10 |
| Specific Gravity | 1.74 ± 0.02 | — | RTM : 3 |
| Viscosity | 10000 - 15500 | mPa.s | RTM : 8 |

Characteristics of Hardener: HL171C

| Property | Value | Unit | Standard |
|------------------|--------------|-------------|-----------------|
| Colour | Brown | — | RTM : 10 |
| Specific Gravity | 1.23 ± 0.02 | — | RTM : 5 |
| Viscosity | 200 - 250 | mPa.s | RTM : 8 |

Characteristics of Mixed System: EL171C

| Property | Value | Unit | Standard |
|---------------------|---------------|-------------|-----------------|
| Colour | Black or Grey | — | RTM : 10 |
| Specific Gravity | 1.67 ± 0.02 | — | RTM : 3 |
| Viscosity | 5000 - 9000 | mPa.s | RTM : 8 |
| Mix Ratio by Weight | 8.5 : 1 | — | — |
| Mix Ratio by Volume | 6.0 : 1 | — | — |
| Gel Time (No Flow) | 30 | Min | RTM : 15 |
| Cure Schedule * | 24 | Hr | — |

* Allow a minimum of 24 hours for light duty and a minimum of 6 days for resin to achieve maximum properties (at ambient temperature)

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Chemical Characteristics:

| Property | Value | Unit | Standard |
|---------------------|-----------------|-------------|-----------------|
| Water Absorption | < 0.2 | % | RTM : 26 |
| Flammability | Flame Retardant | — | RTM : 28 |
| Chemical Resistance | Good | — | RTM : 29 |

Physical Characteristics:

| Property | Value | Unit | Standard |
|---------------------------------|------------------|-------------|-----------------|
| Shore Hardness | D/1:45 - D/15:40 | — | RTM : 18 |
| Heat Deflection Temperature | Flexible | °C | RTM : 30 |
| Operating Temperature | - 40 to + 100 | °C | RTM : 24 |
| Thermal Conductivity | 0.42 | W/mK | RTM : 31 |
| Tensile Strength | 5.3 | MPa | RTM : 32 |
| Compressive Yield Strength | < 10 | MPa | RTM : 33 |
| Shrinkage | Low | — | RTM : 25 |
| Coefficient of Linear Expansion | Low | — | RTM : 35 |

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Electrical Characteristics:

| Property | Value | Unit | Standard |
|---------------------|--------------|------------------------|-----------------|
| Volume Resistivity | 11 - 13 | Log ₁₀ ohmm | RTM : 36 |
| Surface Resistivity | 12 - 14 | Log ₁₀ ohm | RTM : 37 |
| Electric Strength | > 16 | MV/m | RTM : 38 |
| Permittivity (ε) | 3.2 @ 1KHz | — | RTM : 39 |
| Loss Tangent (Tanδ) | 0.04 @ 1KHz | — | RTM : 40 |

All measurements are at 25°C and have tolerance of ± 20% unless stated otherwise

N.B. These results do not constitute a specification and are quoted for guidance use only. The information given is derived from test and/or extrapolations believed to be reliable. However, the product is offered for evaluation on the understanding that the customer will satisfy himself that the product is suitable for his intended use. Details of Robnor Test Methods (RTM) available upon request.

Specifications:

Customers are advised to consult our Material Specification for this product prior to use, to verify acceptance criteria.

Cleaning Equipment

All equipment should be cleaned before the compound has hardened. Robnor Resin TS130 is a suitable non-flammable cleaning agent, although other solvents may be found suitable. TS130 is also suitable for removing cured resins - data available on request.

Storage of Bulk Resin and Hardener

All polyurethane resins are Hygroscopic and absorption of moisture will effect both resin and hardener reactivity and physical properties of the resulting polymer. herefore the material should be stored in sealed dry containers. Once opened, the resin and hardener can be protected from atmospheric moisture by purging with dry Nitrogen gas - purging grade (available from British Oxygen Co.) Alternately desiccant traps can be used to dry the incoming air.

Cold temperatures between 7 and 10°C can be used to lessen any separation of resin ingredients, however, care must be taken to prevent condensation by allowing contents to return to ambient temperature prior to opening containers. The urethane Isocyanate

hardeners must be stored above 15°C to prevent crystallisation. If crystals are visible contact Robnor before use. The preferred storage temperature is between 20 and 25°C.

Under these storage conditions the shelf life of the resin is 12 months and the hardener is 12 months.

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Handling Precautions

Polyurethane systems may cause sensitisation by “inhalation” and may be corrosive, harmful or toxic. It is therefore advisable that skin and eye contact are avoided by using appropriate personal protective equipment. Adequate ventilation of the working area is recommended. However, where vapour levels are likely to be above occupational exposure limits, or discomfort is experienced, appropriate respiratory protection should be worn.

It is essential that the specific hazards of the system being used are known before handling any material supplied by Robnor. Users should familiarise themselves with the Health and Safety information provided by the Company both in written correspondence and in the information sources listed below.

- The labels on the product packages and containers
- The product Health and Safety Data Sheet

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Warning

The above basic information is provided by us in good faith but since we do not know the use to which our products may be put we cannot accept any liability for reliance placed on this sheet. We are always prepared to respond to enquiries regarding our products. Our responsibilities to our customers are only as set out in our Terms and Conditions.