

## UR5528 Polyurethane Resin

UR5528 is a two-part potting and encapsulating compound with excellent water resistance properties making it suitable for a wide range of applications where water or moisture ingress may be a concern.

- Excellent adhesion to a wide variety of substrates; versatile in use
- Low viscosity; aids quick and efficient potting processes
- Excellent resistance to acids, alkalis and other aqueous materials; ideal for harsh environments
- Durable with a high degree of toughness; good physical protection

|                  |                                      |            |
|------------------|--------------------------------------|------------|
| <b>Approvals</b> | <b>RoHS Compliant (2015/863/EU):</b> | <b>Yes</b> |
|                  | <b>UL Approval:</b>                  | <b>No</b>  |

### Typical Properties

|                    |                                                                            |                                        |
|--------------------|----------------------------------------------------------------------------|----------------------------------------|
| Liquid Properties: | Base Material                                                              | Polyurethane                           |
|                    | Density Part A - Resin (g/ml)                                              | 1.02                                   |
|                    | Density Part B - Hardener (g/ml)                                           | 1.24                                   |
|                    | Part A Viscosity (mPa s @ 23°C)                                            | 3500                                   |
|                    | Part B Viscosity (mPa s @ 23°C)                                            | 150                                    |
|                    | Mixed System Viscosity (mPa s @ 23°C)                                      | 2000                                   |
|                    | Mix Ratio (Weight)                                                         | 2.37:1                                 |
|                    | Mix Ratio (Volume)                                                         | 2.87:1                                 |
|                    | Usable Life (20°C)                                                         | 20 mins                                |
|                    | Gel Time (23°C)                                                            | 35 mins                                |
|                    | Cure Time (23 °C)                                                          | 24 hours                               |
|                    | Cure Time (60 °C)                                                          | 5 hours                                |
|                    | Colour Part A - Resin                                                      | Black                                  |
|                    | Colour Part B - Hardener                                                   | Amber                                  |
|                    | Storage Conditions                                                         | Dry Conditions: Above 15°C, Below 30°C |
|                    | Shelf Life                                                                 | 12 months                              |
|                    | Exotherm<br>(Measured on 100ml sample; cylinder of diameter 49.4mm @ 23°C) | < 35°C                                 |
|                    | Shrinkage                                                                  | < 1%                                   |

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Electrolube cannot be held responsible for the performance of its products within any application determined by the customer, who must satisfy themselves as to the suitability of the product.

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Certificate No. FM 32082

|               |                                                                                         |                                           |
|---------------|-----------------------------------------------------------------------------------------|-------------------------------------------|
| Cured System: | Thermal Conductivity (W/m.K)                                                            | 0.245                                     |
|               | Cured Density (g/ml)                                                                    | 1.07                                      |
|               | Temperature Range (°C)                                                                  | -50 to +125                               |
|               | Max Temperature Range (Short Term (°C)/30 mins)<br>(Application and Geometry Dependent) | +130                                      |
|               | Dielectric Strength (kV/mm)                                                             | 25 (extra data – see below)               |
|               | Volume Resistivity (ohm-cm)                                                             | 10 <sup>14</sup> (extra data – see below) |
|               | Shore Hardness                                                                          | D57                                       |
|               | Colour (Mixed System)                                                                   | Black                                     |
|               | Flame Retardancy                                                                        | No                                        |
|               | Loss Tangent @ 50 Hz                                                                    | 0.027                                     |
|               | Permittivity @ 50 Hz                                                                    | 3.50 (extra data – see below)             |
|               | Comparative Tracking Index                                                              | Not Measured                              |
|               | Water Absorption                                                                        | See below                                 |
|               | Tensile Strength (N/mm <sup>2</sup> )                                                   | 14.2                                      |
|               | Tear Strength (kN/m)                                                                    | 52                                        |
|               | Elongation At Break                                                                     | 104%                                      |

### Chemical Resistance Data

Resin resistance to distilled water @ 100°C (size 120 x 15 x 10mm)

| Immersion Period (days) | % Weight Change |
|-------------------------|-----------------|
| 1                       | +1.0            |
| 2                       | +1.5            |
| 5                       | +1.5            |
| 6                       | +2.0            |
| 9                       | +2.0            |

Resin resistance to distilled water at ambient temperature

| Immersion Period (days) | % Weight Change |
|-------------------------|-----------------|
| 3                       | +0.5            |
| 30                      | +0.5            |
| 180                     | +1.1            |

Water Vapour Permeability: 2.25 g.cm per cm<sup>2</sup>.H.mbar

### Electrical and Physical Properties

(Specimen 95 mm diameter by 1 mm thickness)

| Dielectric Strength (kV/mm) |    |
|-----------------------------|----|
| Dry                         | 25 |
| 4 Days at 80% RH            | 25 |
| 24 Hours in Water           | 23 |

**Surface Resistance (ohms)**

|                   |                    |
|-------------------|--------------------|
| Dry               | $4 \times 10^{14}$ |
| 4 Days at 80% RH  | $5 \times 10^{13}$ |
| 24 Hours in Water | $2 \times 10^{14}$ |

**Volume Resistivity (ohm.cm)**

|                   |                    |
|-------------------|--------------------|
| Dry               | $5 \times 10^{14}$ |
| 4 Days at 80% RH  | $9 \times 10^{14}$ |
| 24 Hours in Water | $2 \times 10^{15}$ |

**Permittivity (Dry)**

|           |     |
|-----------|-----|
| At 50 Hz  | 3.5 |
| At 800 Hz | 3.4 |
| At 1 Mhz  | 3.3 |
| At 3 Ghz  | 2.9 |

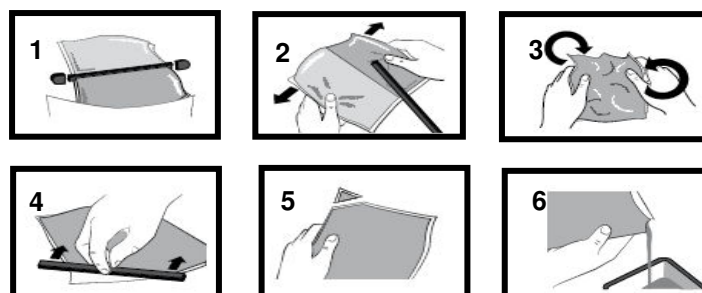
**Dissipation Factor, Tan Delta (Dry)**

|           |       |
|-----------|-------|
| At 50 Hz  | 0.027 |
| At 800 Hz | 0.014 |
| At 1 Mhz  | 0.011 |
| At 3 Ghz  | 0.007 |

## **Mixing Procedures**

### **Resin Packs**

When in Resin pack form, the resin and hardener are mixed by removing the clip and moving the contents around inside the pack until thoroughly mixed. To remove the clip, remove both end caps, grip each end of the pack and pull apart gently. By using the removed clip, take special care to push unmixed material from the corners of the pack. Mixing normally takes from three to four minutes depending on the skill of the operator and the size of the pack. Both the resin and hardener are evacuated prior to packing so the system is ready for use immediately after mixing. The corner may be cut from the pack so that it may be used as a simple dispenser. There is also a YouTube video ([Polyurethane Mixing Instructions](#)) available on the Electrolube channel to show the mixing process.



### **Bulk Mixing**

When mixing, care must be taken to avoid the introduction of excessive amounts of air. Automatic mixing equipment is available which will not only mix both the resin and hardener accurately in the correct ratio but do this without introducing air. Containers of Part A (Resin) and Part B (Hardener) should be kept sealed at all times when not in use to prevent the ingress of moisture. Bulk material must be thoroughly mixed before use. Incomplete mixing or use of the wrong mix ratio will result in erratic or partial curing.

### **Additional Information**

- Cleaning:** It is far easier for machines & containers to be cleaned before the resin has been allowed to cure. Electrolube's RRS is suitable for cleaning machines and containers and cured resin may be slowly softened and removed by soaking in our RRS.
- Curing:** Do not heat cure large volumes immediately. Allow these to gel at room temperature and post-cure at high temperature if required (refer to liquid properties for details). Small volumes (250ml) may be heat cured immediately.
- Storage:** When storing under very cold conditions, the hardener may crystallise. If this occurs, simply warm (40°C) the container gently until all crystals have re-melted.
- Health & Safety:** Always refer to the Health & Safety data sheet before use. These can be downloaded from [www.electrolube.com](http://www.electrolube.com)

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