

## UR5557 Polyurethane Resin

UR5557 system extends conventional urethane technology into new territory as far as two part encapsulation and cable jointing compounds are concerned. UR5557 is a hard but tough fast curing casting resin which exhibits excellent adhesion to a wide variety of substrates.

- Excellent adhesion to a variety of substrates; ideally suited for PVC, ceramics and metals
- 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)   | 1.03                                   |
|                    | Density Part B - Hardener (g/ml)  | 1.24                                   |
|                    | Part A Viscosity (mPa s @ 23°C)   | 3500                                   |
|                    | Part B Viscosity (mPa s @ 23°C)   | 100                                    |
|                    | Mixed System Viscosity (mPa s @ 23°C)   | 1800                                   |
|                    | Mix Ratio (Weight)  | 2.39:1                                 |
|                    | Mix Ratio (Volume)  | 2.89:1                                 |
|                    | Usable Life (20°C)  | 30 mins                                |
|                    | Gel Time (23°C)   | 50 mins                                |
|                    | Cure Time (23°C)  | 24 hours                               |
|                    | Colour Part A - Resin   | White                                  |
|                    | Colour Part B - Hardener  | Brown                                  |
|                    | Storage Conditions  | Dry Conditions: Above 20°C, Below 30°C |
|                    | Shelf Life  | 6 months                               |
|                    | Exotherm  | < 35°C                                 |
|                    | <small>(Measured on 100ml sample in a cylinder of diameter 49.4mm @ 23°C)</small> |  |

|               |   |   |
|---------------|---|---|
| Cured System: | Thermal Conductivity (W/m.K)  | 0.245                                     |
|               | Cured Density (g/ml)  | 1.08                                      |
|               | Temperature Range (°C)  | -50 to +100                               |
|               | Max Temperature Range (Short Term (°C)/30 mins)<br>(Application and Geometry Dependent) | +110                                      |
|               | Dielectric Strength (kV/mm)   | 25 (extra data – see below)               |
|               | Volume Resistivity (ohm-cm)   | 10 <sup>14</sup> (extra data – see below) |
|               | Shore Hardness @ 25°C   | D57                                       |
|               | Colour (Mixed System)   | White                                     |
|               | Permittivity @ 50 Hz  | 3.50 (extra data – see below)             |
|               | Water Absorption  | See Below                                 |
|               | Tensile Strength (N/mm <sup>2</sup> )   | 14.2                                      |
|               | Elongation at break   | 104%                                      |
|               | Tear Resistance (kN/m)  | 52  |

**Chemical Resistance Data**

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

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

Water vapour Permeability: 2.25 (g.cm)/cm<sup>2</sup>.H.mbar

**Electrical and Physical Properties:**

(Specimen 95mm diameter by 1mm thickness)

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

**Surface Resistance (ohms)**

|                   |                    |
|-------------------|--------------------|
| Dry               | $3 \times 10^{14}$ |
| 4 Days at 80% RH  | $4 \times 10^{13}$ |
| 24 Hours in Water | $2 \times 10^{14}$ |

**Volume Resistivity (ohm.cm)**

|                   |                    |
|-------------------|--------------------|
| Dry               | $3 \times 10^{14}$ |
| 4 Days at 80% RH  | $3 \times 10^{14}$ |
| 24 Hours in Water | $5 \times 10^{14}$ |

**Permittivity (Dry)**

|           |     |
|-----------|-----|
| At 50 Hz  | 3.5 |
| At 800 Hz | 3.4 |
| At 1 MHz  | 3.3 |
| At 3 GHz  | 2.9 |

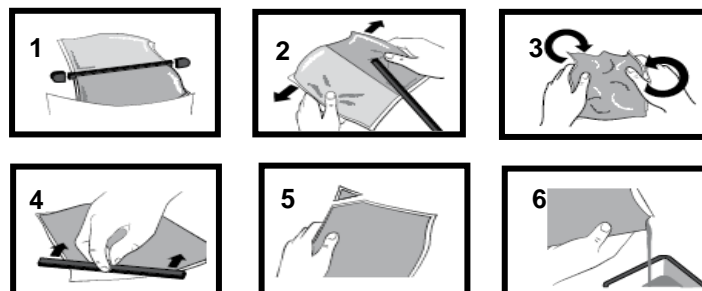
**Dissipation Factor - Tan (Dry)**

|           |      |
|-----------|------|
| At 50 Hz  | 0.05 |
| At 800 Hz | 0.02 |
| At 1 MHz  | 0.01 |
| At 3 GHz  | 0.01 |

**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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All information is given in good faith but without warranty. Properties are given as a guide only and should not be taken as a specification.

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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