# UR5604

**Polyurethane Resin**

## DESCRIPTION

**UR5604** is a two-part, high performance polyurethane especially formulated for potting and encapsulating. It is ideal as a general purpose resin also offering UL approval.

READ ENTIRE TECHNICAL BULLETIN BEFORE USING THIS PRODUCT

## FEATURES AND BENEFITS

- General purpose polyurethane resin; ideal for a wide variety of challenging environments
- UL approved to UL94 V-0; high level of flame retardancy
- Low mixed system viscosity; ensures quick and efficient potting processes
- Excellent adhesion to a wide variety of substrates

## APPROVALS

| Standard | Status |
|---|---|
| RoHS Compliant (2015/863/EU) | Yes |
| UL Approval | UL94 V-0 (File: E100107) |

## PRODUCT INFORMATION

For available packaging sizes please visit:

electrolube.com

## PHYSICAL PROPERTIES

| Category | Results |
|---|---|
| **Liquid Properties** | |
| Base Material | Polyurethane |
| Color<br>Part A – Resin<br>Part B - Hardener | <br>Black<br>Brown |
| Density<br>Part A - Resin (g/mL)<br>Part B - Hardener (g/mL) | <br>1.62<br>1.21 |
| Viscosity (mPa s 23 °C)<br>Part A<br>Part B<br>Mixed System | <br>12500<br>50<br>2000 |
| Mix Ratio<br>Weight<br>Volume | <br>5.21:1<br>3.88:1 |
| Usable Life @ 20 °C | 40 minutes |
| Gel Time @ 23 °C | 90 minutes |
| Cure Time<br>23 °C<br>60 °C | <br>24 hours<br>3 hours |
| Storage Conditions | Dry Conditions: Above 20 °C, Below 30 °C |
| Shelf Life | 12 Months |
| Exotherm (Measured on 100 mL sample, cylinder of diameter 49.4 mm @ 23 °C) | <35 °C |
| Shrinkage | < 1% |
| **Cured System** | |
| Color (Mixed System) | Black |
| Thermal Conductivity (W/m.K) | 0.45 |

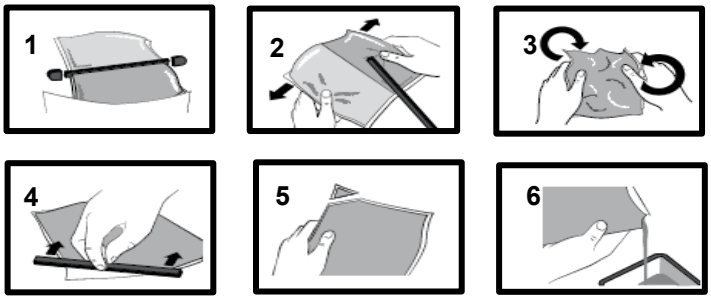
| Category | Results |
|---|---|
| Cured Density (g/mL) | 1.54 |
| Temperature Range (°C) | -40 to 130 |
| Max Temperature Range<br>(Short Term (°C)/30 Mins)<br>(Application and Geometry Dependent) | +155 |
| Weight Loss after 600 Hours @ 155 °C | 7% |
| Volume Resistivity (ohm-cm) | $10^{14}$ |
| Dielectric Strength (kV/mm) | 18 |
| Shore Hardness<br>23 °C<br>-77 °C<br>-60 °C<br>Hardness after 600 hours @ 155 °C | <br>A75 / D25<br>D80<br>D80<br>A92 |
| Flame Retardancy | Yes |
| Loss Tangent @ 50 Hz | 0.015 |
| Permittivity @ 50 Hz | 4.90 |
| Comparative Tracking Index | >600 Volts |
| Water Absorption<br>(9.7 mm thick disk, 51 mm diameter)<br>10 days @ 20 °C / 1 hour @ 100 °C | < 0.5% / < 1% |
| Elongation at Break | Not Measured |

## APPLICATION GUIDELINES – RESIN PACKS

### Mixing Procedures

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.

A demonstration of this mixing procedure is available on YouTube (Polyurethane Mixing Instructions).




## APPLICATION GUIDELINES - BULK

### 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.

## GENERAL

Sedimentation of the resin has been minimized by careful attention to the formulation. However, any sediment which may have occurred over long periods of time must be dispersed before removing any material from the container. This dispersion can be carried out (if necessary) by stirring with a broad bladed spatula or gently rolling the can. Take care not to introduce excessive amounts of air during this operation or it may be necessary to re-evacuate the resin. Sedimentation will be accelerated by storage at high temperatures. Sedimentation found in resin packs forms no problem since the sediment is re-mixed when the pack is used.

## ADDITIONAL INFORMATION

**Cleaning:** It is far easier for machines & containers to be cleaned before the resin has been allowed to cure. 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 (250 mL) may be heat cured immediately.

**Storage:** When storing under very cold conditions, the hardener may crystallize. If this occurs, simply warm (40 °C) the container gently until all crystals have re-melted.

## SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

## CONTACT INFORMATION

**To confirm this document is the most recent version, please contact**
**TechnicalSupportTeam@hkw.co.uk**
www.electrolube.com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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE . Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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