ELECTROLUBE
THE SOLUTIONS PEOPLE

# ER2223
## Epoxy Resin

ER2223 is a two-part, high Tg, low viscosity epoxy encapsulation resin which has primarily been developed for encapsulation of electrical components that require high temperature resistance.

- Low viscosity; aids ease of potting difficult and complex geometries
- Good chemical resistance; offers good protection in a range of environments
- Excellent adhesion to a wide range of substrates
- Wide operating temperature range; excellent high temperature performance

### Typical Properties

| | | |
|---|---|---|
| Liquid Properties: | Base Material | Epoxy |
| | Density Part A - Resin (g/ml) | 1.15 |
| | Density Part B - Hardener (g/ml) | 0.96 |
| | Part A Viscosity (mPa s @ 23ºC) | 4000 |
| | Part B Viscosity (mPa s @ 23ºC) | 50 |
| | Mixed System Viscosity (mPa s @ 23ºC) | 800 |
| | Mix Ratio (Weight) | 3.45 : 1 |
| | Mix Ratio (Volume) | 2.90 : 1 |
| | Usable Life (20°C) | 30 mins |
| | Gel Time (23°C) | 90 mins |
| | Cure Time (23°C) | 24 hours |
| | Cure Time (60°C) | 4 hours |
| | Cure Time (100°C) | 1 hour |
| | Colour Part A - Resin | Black |
| | Colour Part B - Hardener | Colourless to light brown |
| | Storage Conditions | Dry Conditions: Above 15°C, Below 35°C |
| | Shelf Life | 12 months |
| | Shrinkage | <1% |

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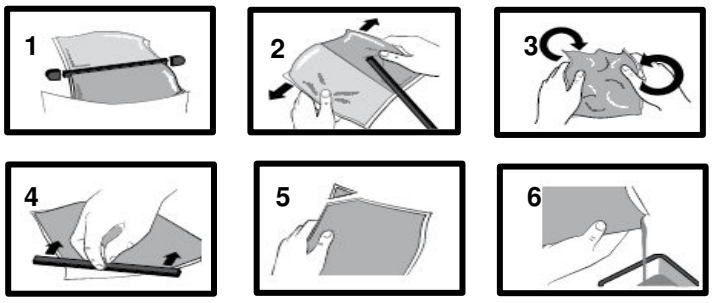
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| | | |
|---|---|---|
| Cured System: | Cured Density (g/ml) | 1.10 |
| | Temperature Range (°C) | -40 to +180 |
| | Max Temperature (Short Term (°C)/30 mins) (Application and Geometry Dependent) | 210ºC |
| | Glass Transition Temperature (°C) | 140 |
| | Shore Hardness @ 25ºC | D80 |
| | Shore Hardness @ 60°C | D80 |
| | Shore Hardness @ 100°C | D75 |
| | Colour (Mixed System) | Black |
| | Dielectric Strength (kV/mm) | 12 |
| | Volume Resistivity (ohm-cm) | $10^{15}$ |
| | Flame Retardancy | No |
| | Water Absorption (10 days @ 20ºC) | <0.25% |
| | Water Absorption (1 hour @ 100°C) | <0.25% |
| | Coefficient of Thermal Expansion (ppm) | 70 |

## 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 (Epoxy Mixing Instructions) available on the Electrolube channel to show the mixing process.




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**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 minimised 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. 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 (60°C) the container gently until all crystals have re-melted. Resin packs must be kept flat during heating.

**Health & Safety:** Always refer to the Health & Safety data sheet before use. These can be downloaded from www.electrolube.com

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