

## SC4003E Silicone Resin

SC4003E is a two-part silicone potting and encapsulating resin designed for the protection of electronic devices. It has excellent high temperature properties, suitable for use in applications where the operating temperature will be up to 200°C. It is particularly suited to applications where thin films are required due to its moisture cure nature.

- Good flow characteristics to allow the potting of difficult and complex geometries
- Simple 1:1 mix ratio, for ease of processing
- Wide temperature range ideal for applications requiring high temperature resistance
- Soft resin, exhibits low stress on components

**Approvals**                      **RoHS Compliant (2015/863/EU):**                      **Yes**

### Typical Properties

Liquid Properties:	Base Material	Silicone
	Density Part A - Resin (g/ml)	1.43
	Density Part B - Hardener (g/ml)	1.43
	Part A Viscosity (mPa s @ 23°C)	4000
	Part B Viscosity (mPa s @ 23°C)	3000
	Mixed System Viscosity (mPa s @ 23°C)	3500
	Mix Ratio (Weight)	1 : 1
	Mix Ratio (Volume)	1 : 1
	Usable Life (20°C)	45 mins
	Gel Time (23°C)	180 mins
	Cure Time (23°C)	24 hours
	Colour Part A - Resin	Black
	Colour Part B - Hardener	White
	Storage Conditions	Dry Conditions: Above 15°C, Below 30°C
	Shelf Life	12 months

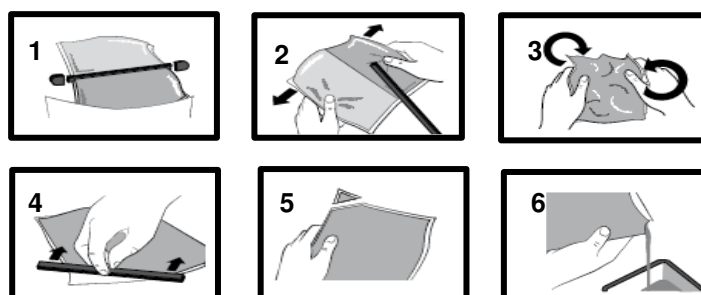
Cured System:	Cured Density (g/ml)	1.43
	Temperature Range (°C)	-60 to +200
	Max Temperature (°C) (Short Term (°C)/30 mins) (Application and Geometry Dependent)	220
	Colour (Mixed System)	Black
	Hardness* (23°C)	A75
	Dielectric Strength (kV/mm)	22
	Volume Resistivity (ohm-cm)	10 <sup>14</sup>
	Thermal Conductivity (W/m.K)	0.7
	Tear Strength (N/mm)	6
	Flame Retardancy	Meets UL 94 V-0
	Shrinkage	< 4%

\*Final hardness achieved after 7 days, humidity dependent.

## **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 ([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.

## 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.

SC4003E is a moisture curing system. Relative humidity of 50% or above is preferred for curing; the thickness of the layer will affect the rate of initial cure – the higher the thickness applied, the longer it will take to reach the required strength. Moisture cure systems use humidity during curing and cannot be accelerated using heat. The cure process will only take place if the material is open to the atmosphere and curing will be adversely affected if access to humidity is removed prior to the completion of the cure process.

## 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. All surfaces must be clean before the mixed resin is applied. Certain materials, chemicals, curing agents and plasticisers can inhibit the cure of silicone resins. The most notable of these include:

- Organometallic compounds including tin complexes
- Silicone rubber containing tin catalysts
- Sulphur, polysulphides, polysulphones or other sulphur containing materials
- Amines, urethanes or other amine containing materials
- Unsaturated hydrocarbon plasticisers
- Some solder flux residues

**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.

**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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