

## SE2003 (RTV2080) Thermally Conductive Silicone Encapsulant

### Introduction

**SE2003** is a 2-component, silicone elastomer system specially designed for electronic potting applications. It offers good protection against impact damage and can be employed in areas where low flammability is a prerequisite. The cured product is a hard, medium to high modulus elastomer that can be repaired. The component parts have relatively low viscosities and are readily mixed in a simple 1:1 ratio.

### Key Features

- Room temperature cure
- Neutral and non corrosive
- Excellent thermal conductivity
- Resistant to reversion

### Use and Cure Information

#### How to Use

**IMPORTANT:** **SE2003** contains the platinum catalyst, great care should be taken when using automatic dispensing equipment. Please ensure that it is not contaminated by residual hydride containing rubber in the dispensing equipment, as curing will result. If in doubt, it's advised to thoroughly purge the equipment with a suitable hydrocarbon solvent or silicone fluid.

Mix both the A and B parts gently to ensure homogeneity. Place the required amount of A and B parts by weight at the ration of 1:1 (A to B) in a clean plastic or metal container of approximately 3 times their volume, and mix until the colour of the mixture is uniform.

Degas by intermittent evacuation, the larger volume of the mixing vessel helps prevent overflow during this operation. In case of automatic dispensing with static mixing head, the two components should be degassed before processing. Recommended vacuum conditions are 30-50 mbar intermittently over 5-10 minutes. Cast the mixture either by gravity or pressure injection.

#### Curing Conditions

The following table offers a guide to the rate of cure of **SE2003** at various temperatures, mixing of the components between 15 and 25°C is recommended to ensure adequate pot life for degassing and handling. The pot life can be extended to several hours by chilling the components.

| Temperature, °C | Max Cure Time |
|-----------------|---------------|
| 25              | 24 hrs        |
| 100             | 30 mins       |

#### Inhibition of Cure

Great care must be taken when handling and mixing all addition cured silicone elastomer systems, that all the mixing tools (vessels and spatulas) are clean and constructed in materials which do not interfere with the curing mechanism. The cure of the rubber can be inhibited by the presence of compounds of nitrogen, sulphur, phosphorus and arsenic; organotin catalysts and PVC stabilizers; epoxy resin catalysts and even contact with materials containing certain of these substances e.g. moulding clays, sulphur vulcanised rubbers, condensation cure silicone rubbers, onion and garlic.

| Property   | Test Method | Value                    |
|--|-------------|--------------------------|
| <b>Uncured Product</b>                           |             |                          |
| Colour A Part:                                   |             | White                    |
| Colour B Part:                                   |             | Red                      |
| Appearance:                                      |             | Brick red viscous liquid |
| Viscosity A Part:                                | Brookfield  | 40000 mPa.s              |
| Viscosity B Part:                                | Brookfield  | 30000 mPa.s              |
| Catalysed viscosity                              | Brookfield  | 35000 mPa.s              |
| Pot Life:  |             | 120 minutes *            |
| * measured at 23+/-2°C and 65% relative humidity |             |                          |

#### Cured Elastomer

| <i>(after 7 days cure at 23+/-2°C and 65% relative humidity)</i> |                |              |
|--|----------------|--------------|
| Colour   |                | Brick Red    |
| Tensile Strength:  | BS903 Part A2  | 3.30 MP      |
| Elongation at Break:   | BS903 Part A2  | 40 %         |
| Youngs Modulus:  |                | 16.90 MPa    |
| Modulus at 100% Strain:  | BS903 Part A2  | MPa          |
| Tear Strength:   | BS903 Part A3  | 3.21 kN/m    |
| Hardness:  | ASTM D 2240-95 | 80° Shore A  |
| Specific Gravity:  | BS 903 Part A1 | 2.30         |
| Linear Shrinkage:  |                | 0.10 %       |
| Thermal Conductivity:  |                | 1.27 W/m     |
| Coefficient of Thermal Expansion:                                |                |              |
| Volumetric   |                | 465 ppm / °C |
| Linear   |                | 155 ppm / °C |
| Min. Service Temperature:  |                | -50°C        |
| Max. Service Temperature:  | AFS 1540B      | 250 °C       |

#### Electrical Properties

##### Surface Resistivity

|                               |            |               |
|-------------------------------|------------|---------------|
| Volume Resistivity:           | ASTM D-257 | 2.53E+16 Ω.cm |
| Surface Resistivity:          | ASTM D-257 | 1.76E+16Ω     |
| Dielectric Strength:          | ASTM D-149 | 22.5kV/mm     |
| Dielectric Constant at 1 kHz: | ASTM D-150 | 6             |
| Dissipation Factor at 1MHz:   | ASTM D-150 |               |

#### Flammability

**UL94 V-0 Rated** **No**

#### Adhesion

**Self Bonding** **No**

All values are typical and should not be accepted as a specification.

**Health and Safety** - Material Safety Data Sheets available on request.

**Packages** – ACC Addition cure encapsulants are supplied in a range of pack sizes please contact the sales office for details

Arrangements can be made to supply in other pack sizes.

**Storage and Shelf Life** – Expected to be 12 months in original, unopened containers below 30°C.

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