

## TBS Thermal Bonding System

TBS is a two-part, thermally conductive epoxy system, designed for bonding applications at thermal interfaces. It is ideal for use as a bonding medium in surface mounting assemblies and where the design of heat sinks does not allow for welding or brazing techniques to be employed due to complexity or geometry of the fins.

- High bond strength and excellent adhesion; provides an alternative to welding techniques
- Very good thermal conductivity; optimum efficiency of heat dissipation
- Contains solid glass spheres (200-300 µm diameter); aids application by controlling the correct coating thickness
- Room temperature curing; simple mixing and curing procedures for ease of use

<b>Approvals</b>	<b>RoHS Compliant (2015/863/EU):</b>	<b>Yes</b>
<b>Typical Properties</b>	Colour (Part A):	Blue
	Colour (Part B):	Cream
	Viscosity @ 1rpm (Pa s):	70-80
	Mix Ratio (A:B):	3:1
	Usable Life:	3 to 4 hours
	Cure Time:	45 mins @ 100°C 75 mins @ 60°C 8 to 12 hrs @ room temperature - hard 48 hours @ room temperature - full cure
<b>Cured Properties</b>	Cured Density (g/ml):	1.85
	Thermal Conductivity:	1.1 W/m.K
	Operating Temperature Range:	-40°C to + 120°C
	Deflection Temperature:	100°C
	Electric Strength:	11 to 12 kV/mm
	Volume Resistivity:	10 <sup>14</sup> to 10 <sup>15</sup> Ohms/cm
	Tensile Strength:	2200N/cm <sup>2</sup>
	Modulus of Elasticity:	2 to 3 GN/m <sup>2</sup>
	Specific Heat Capacity:	0.29 - 0.435 x 106 lbf/in <sup>2</sup> 0.5 cal/g/°C @ 30°C – Part A 0.35 cal/g/°C @ 30°C – Part B

<u>Description</u>	<u>Packaging</u>	<u>Order Code</u>	<u>Shelf Life</u>
<u>Thermal Bonding System</u>	20 ml Twin Syringe System 1kg Kit	TBS20S TBS01K	36 months 24 months

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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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## **Directions for Use**

TBS is especially useful in the manufacture of heat sink assemblies where 'piggy back' arrangements are applied and where the manufactured design of heat sinks does not allow for welding or brazing techniques to be employed due to complexity or geometry of the fins. Bare metal parts and heat sinks can be coated with TBS to avoid the risk of short circuiting if they contact other parts due to vibration damage. Chassis assemblies can be used as heat sinks by coating them with TBS and mounting components on them - the chassis can still be earthed.

Surfaces must be clean and dry and free from grease, dust and contaminants. Electrolube manufacture a range of solvent and water based cleaning solutions for the preparation of surfaces prior to application. Mix the two parts of the compound together (as per the mix ratio given above). Apply to one of the prepared surfaces using a clean instrument, ensuring a thin even coating is achieved. Press the two surfaces together firmly (1-2 bars is adequate and a pressure of over 6 bar should not be applied). The mixture will remain flexible to allow for positioning adjustments to be made at this stage if necessary. For full cure, please follow the instructions above.

## **Additional Information**

There are many methods of measuring thermal conductivity, resulting in large variances in results. Electrolube utilise a heat flow method which takes into account the surface resistance of the test substrate, thus offering highly accurate results of true thermal conductivity. Some alternative methods do not account for such surface resistance and can create the illusion of higher thermal conductivity. Therefore, when comparing thermal conductivity measurements it is important to know what test method has been utilised. For more information please contact the Electrolube Technical Department.

The rate at which heat flows is dependent on the temperature differential, the thickness and uniformity of the layer, and the thermal conductivity of the material. Products with the same comparable thermal conductivity value may have very different efficiencies of heat transfer in the end application depending on how successfully a thin even film can be applied.

A full range of heat transfer products are available from Electrolube: standard and highly thermal conductive pastes (HTC, HTSP, etc.), gap filling materials (HTCPX), Silicone RTVs (TCOR, TCER) and encapsulation resins (ER2220, UR5633, SC2003).

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