

# MicroCoat Technologies

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*Unparalleled in Polymer Coatings and Adhesives Technology™*

## PRODUCT DATA SPECIFICATION

### MCT 2-8190C

A High Performance **Single Component, Non Frozen** Conductive Epoxy  
For Die Attach

**Approved to 20+GHZ and an Operating Temperature Range of -55°C to +200°C**

MicroCoat **2-8190C** is a one part thermosetting conductive epoxy designed primarily for die attaching semiconductors and surface mount devices in military, "down-the-hole" hybrids, optoelectronics, automotive sensors and transducers, etc. A "Sister" formulation to MCT's SD0802C, this material is a thixotropic paste which may be applied by screen printing or syringe. It is 100% solids, and possesses good handling and storage properties. This silver-filled conductive die attach adhesive is designed to bond ICs and components to advanced substrates such as ceramic, PBGAs, CSPs and array packages with virtually no bleed. Hydrophobic and stable at high temperatures, the adhesive produces a void-free bond line with excellent interfacial adhesion strength to a wide variety of organic and metal surfaces including solder mask, BT, FR, polyimide, gold, Kapton and Mylar. This material is formulated to provide high cohesive energy, adhesive strength, and elongation at break. Short term at 300°C (2-3 minutes for Pb free reflow) OK if cured at 150°C for 60 minutes

#### **Composition Properties**

|                                           |                                                         |
|-------------------------------------------|---------------------------------------------------------|
| Filler Contents:                          | 85% Silver                                              |
| Viscosity:                                | 20-35 Kcps @ 10 RPM Brookfield HBT CP51 cone and plate. |
| Thixo Ratio at above viscosity parameters | 1.25 – 2.55                                             |
| Average Particle Size:                    | .70 – 1.25 microns                                      |

#### **Typical Cured Properties<sup>2</sup> at Minimum Bond Line of 38 Microns**

|                                                                                          |                                                              |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Volume Resistivity:                                                                      | 0.0001 to 0.0002 Ω-cm                                        |
| Thermal Conductivity                                                                     | 7.1 W/mk @ 1 mil bondline<br>11.0-12.9 W/mk @ 2 mil bondline |
| CTE Alpha 1 ppm/°C                                                                       | 50                                                           |
| CTE Alpha 2 ppm/°C                                                                       | 200                                                          |
| Tg°C                                                                                     | 117                                                          |
| Die Shear psi                                                                            | >8000                                                        |
| Shore "D" Hardness                                                                       | 75 - 80                                                      |
| Post Cure Ionics 883/5011.3.8.7                                                          | Cl=<6ppm, Na+=<3.3ppm, K+=<1.1ppm                            |
| Teflon Flask 5 gm sample using 20-40 mesh, 50 gm DI H <sub>2</sub> O, 100°C for 24 hours |                                                              |
| Modulus:                                                                                 |                                                              |
| @65C                                                                                     | 5595 MPa                                                     |
| @25C                                                                                     | 5510 MPa                                                     |
| @150C                                                                                    | 925 MPa                                                      |
| @250C                                                                                    | 310 MPa                                                      |

#### **Processing Procedures**

Mixing: The material should be lightly stirred prior to use if used from a jar. Not required if in a syringe

#### **Application**

The material may be applied by screen printing or syringe dispense

**Curing:** Cure at 150°C for 60 minutes. Optimum conditions will vary depending upon application and will need to be determined experimentally. Alternate cure schedule is 2 hours at 125°C

**Storage** MicroCoat 2-8190C should be stored in sealed containers away from heat or flames. It has a shelf life of 4 days at a storage temperature of 25°C, 3 months at -10°C or 6 months at -40°C. Material **may** be returned to refrigerator/freezer after using partial syringes or jars.

**Packaging:** 3cc, and 10cc syringes **Shipped Unfrozen** next day delivery only

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