

MicroCoat Technologies

1316 Somerset Drive McKinney, TX 75070 www.m-coat.com Tel +1-972-678-4950 Fax +1-214-257-8890

Unparalleled in Polymer Coatings and Adhesives Technology™

PRODUCT DATA SPECIFICATION



MCT SD0802 Series

A High Performance

Single Component, Very High Thermal Conductivity, Very Low Resistivity
Conductive Epoxy Interposer for Connecting Silicon Stacked Die Layers

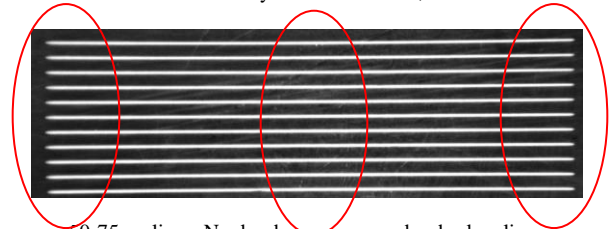
MicroCoat Technologies announces the arrival of their new low resistivity – high thermal conductivity die-stacking interconnect conductive adhesive MCT SD0802. Many companies that are manufacturing stacked flash devices have gone to very fine line dispensed conductive adhesive instead of wirebonding to make the connections from layer to layer. MCT has developed a magnificent solution. It can be a dispensed bead or using high speed jet dispensing of conductive adhesive, the material can be applied at 50 microns wide with no sag or slump to 16+ flash layers (tested to date) with a 7 day room temperature working life. Besides the cost and space savings compared to wirebonding the conductive paths provide a ground-breaking method for helping to cool the device(s) with the high thermal conductivity of the epoxy acting as cooling fins. *It is shown that a 32MB 3D stacked DRAM cache can reduce the cycles per memory access of a twothreaded RMS benchmark on average by 13% and as much as 55% while increasing the peak temperature by a negligible 0.08°C. Off-die BW and power are also reduced by 66% on average. It is also shown that a 3D floorplan of a high performance microprocessor can simultaneously reduce power 15% and increase performance 15% with a small 14°C increase in peak temperature. Voltage scaling can reach neutral thermals with a simultaneous 34% power reduction and 8% performance improvement. Bryan Black, et al, Intel Corporation.*

This adhesive is a thixotropic silver filled conductive frozen adhesive capable of dispensed line widths of 50 microns.

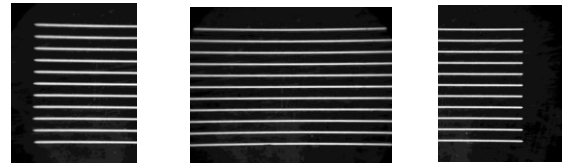
It is 100% solids, and posses' good handling and storage properties. This silver-filled conductive adhesive is designed to bond from IC to IC on Silicon with either gold or aluminum pads. It also bonds ICs and components to advanced substrates such as ceramic, PBGAs, CSPs and array packages with virtually no bleed. Hydrophobic and stable at high temperatures, the adhesive produces a void-free line with excellent interfacial adhesion strength. This material is formulated to provide high cohesive energy, adhesive strength, and elongation at break. Operating temperature range -55°C – 225°C; Short term to 300°C.



Photo Courtesy Vertical Circuits, Inc.



50-75um lines: No dog-bone; no spread or broken lines



Start

Middle

Stop

SD0802G/5JS

/NS

/LVD

/NSLVD03

Composition Properties

Filler Contents:

Viscosity: Thixotropic – Typ @ 10 RPM Brookfield HBT CP51 20-35 Kcps.

Thixo Ratio at above viscosity parameters

Average Particle Size:

85+% Silver

18-25 Kcps

18-25 Kcps

20-30 Kcps

~1.89 – 2.30

.70 – 1.25 microns

Typical Cured Properties

Volume Resistivity:

.00015 - .00008mohms (Dispensed)

Thermal Conductivity

11.0 - 11.9W/m-K

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 H₂O, 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 Jet Spray, screen printing or syringe dispense

Curing: Cure at 150°C for 45 minutes. Optimum conditions will vary depending upon application and will need to be determined experimentally.

Storage MicroCoat should be stored in sealed containers away from heat or flames. It has a shelf life of 7-9 days at a storage temperature of 25°C, 3 months at -10°C or 6 months at -40°C.

DO NOT STORE AT TEMPERATURE BELOW -40°C.

Material **may** be returned to refrigerator/freezer after using partial syringes or jars if within the shelf life window.

Packaging: 3cc, and 10cc syringes **Shipped in Freeze Packs** next day delivery only

v.R.071812