Product Data Sheet

Product

MCT 34T71ND-2

MicroCoat Technologies
http:www.m-coat.com
Unparalleled in Polymer Coatings and Adhesives Technology

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A Single Component, Toughened, Microelectronic Grade Package Sealant with a Service Temperature of <-55°C to Over >300°C and Meets NASA Low Outgassing Specifications

MicroCoat MCT 34T71ND-2 features a unique blend of performance properties including both high shear and peel strengths along with convenient handling and high/low temp properties allowing it to be easily rated MSL1. This extremely low moisture absorption adhesive has passed >1 year at 30°C/85%RH and can be used in MSL1 packaging. A Military and Medical Microelectronic sealing adhesive, MCT 34T71ND-2 is a 100% solids one part non-conductive thermosetting conductive adhesive designed primarily for sealing packages with mismatched thermal expansions in Military, Medical, "down-hole" hybrids, optoelectronics, automotive sensors, and all LCP packages, etc. ***Medical Application: There are no ingredients present in this formulation that has caused a failure in cytotoxicity or USP VI testing in any previous evaluations. ISO 13485 does not exclude materials unless the company specifically designs it to in which case we would need to know more about the design of your quality system.***

A much improved higher temperature resistant material. This is a one-component system formulated to cure at elevated temperatures that will withstand 85/85 for >3500 hours.

MCT 34T71ND-2 has several outstanding processing advantages;

- **No mixing is necessary before use**
- **This material is "Pre-mixed and Frozen"**
- **The viscosity remains constant with time (i.e. it will not thicken over time)**
- **Working life is unlimited* at room temperature, and the material is room temperature storable* for 1 month**
- **No cleanup required in-between shifts**

MCT 34T71ND-2 forms high strength bonds for service over the remarkably wide temperature range of <-65°C to over 300°C and is used for Microelectronic Package Sealing for Kovar/Ceramic, Ceramic/Ceramic, Liquid Crystal Polymers, Ceramic/Thick Film Gold, Pd/Au, Pt/Pd/Au, etc sealing and as a coating for components. As a toughened system, MCT 34T71ND-2 offers superior resistance to impact, thermal shock, vibration, and stress fatigue cracking. It is 100% reactive and does not contain any diluents or solvents and is used in several "down-hole" environments at >2K meters.

MCT 34T71ND-2 is remarkably resistant to severe thermal cycling and many chemicals including water, oil, fuels, and most organic solvents even upon prolonged exposures. Adhesion to metals, glass, and ceramics is excellent. The cured epoxy is a superior electrical insulator and is colored is tan (*this material will darken when exposed to high temperature with NO adverse effects on the adhesive*). MicroCoat Polymer System MCT 34T71ND-2 high performance coupled with its convenient handling makes it widely used in a variety of applications in the aerospace, electronics, microelectronics, electrical, automotive, and chemical industries. MCT 34T71ND-2 will meet NASA low outgassing specifications. For substrate attach to a heatsink a 3 mil minimum bondline is suggested

Product Advantages

- A single component system; no mixing required before use, no viscosity changes over time*.
- Room temperature storable for 30 days!
- *Versatile cure schedules.
- High shear and peel strength to similar and dissimilar substrates over the remarkably wide temperature range of -65°C – 340°C. (Note: Color changes to slightly amber >300°C)
- H_2O Absorption <0.04% - Same as LCP
- ***Passes MSL1 requirements to >3500 hours at 85/85***
- Passes Gross Leak – Seal Integrity - Mil-Std-883 Method 5005 Sub Group 3 Mil-Std-883 1014 2 Gross Leak Test

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- Passes Gross Leak after 500 cycles -65°C to +150°C
- Good electrical insulating properties and chemical resistance.
- Superior thermal shock, impact, and stress cracking fatigue resistance,
- Will meet NASA low outgassing per ASTM E-595, NASA MSFC 1443, Mil-Std-883 5011.4 (3.8.6)
- RoHS Compliant

Product Properties

Solids content, %. 100
Filler; Al2O3
Typical filler particle size of Al2O3 ..... 5-10 um
Viscosity @ 25°C, cps..... Paste
Color; Yellow – Varies from light to medium yellow lot to lot – turns slightly brown at high temperatures
Tensile shear, aluminum to aluminum, 25°C, psi..... >3,200
Tensile strength, 25°C, psi ..... >8,500
Flexural strength, 25°C, psi..... >9,700
Compressive strength, 25°C, psi..... >30,000
Elongation 3.8%
Shore hardness (Shore D) 70
Tensile modulus, 25°C, psi 350,000
Maximum total mass loss (TML) ..... <1.0% of the original sample mass
Maximum collected volatile condensable material (CVCM) deposition..... <0.1%
Tg: ..... +185°C
CTE ..... 50-55 ppm per °C
CTE below the Tg .....$32X10^{-6}$
CTE above Tg .....$124X10^{-6}$
Youngs Modulus; 450-500K
Thermal Conductivity ..... 4.0 W/mK
Service temperature range ..... -100C to 340°C
Short Term High Temp ..... 375°C
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_2O, 100°C for 24 hours

Screen Printing: If screen printing it is suggested to use either a -200 mesh or -165 mesh stainless steel screen. Squeegee should be 80-90 durometer or steel with a slow squeegee head speed. Cleaning of this material from a screen should be done with Toluene or Xylene.

Typical Customer Evaluations;
The following tests were completed successfully on MCT 34T71ND-2 as a Sealing Adhesive:

(1) Temp Cycling (TC);	500 Cycles, -65°C to +150°C
(2) Temperature Humidity Bias (THB);	85% RH, 85 degrees C, 1000 hrs
(3) Gross Leak	Pass 100%
(4) Solder reflow temperature exposure;	260°C for 90 seconds

Cure Schedule Mechanical Convection Oven; 30 minutes @ 150°C or 30-45 minutes @ 120C. Testing after low temperature cure will have to be done to determine when the product is fully cured. As with any adhesive, testing should be done at least 24 hours after cure is complete

SPECIAL NOTE: FOR PACKAGES WITH VERY THIN LIDS, RAMP-UP SHOULD BE AS SLOW AS PRACTICAL TO PREVENT THE LID FROM BOWING. A CLAMP COVERING THE ENTIRE SURFACE HELPS GREATLY

*Shelf life at 25°C in *UNOPENED* containers; 20-30 days. Usually depends on ambient conditions. Storage refrigerator freezer will increase shelf life to 6 months; @ -20°C 9-12 months.

· Available in 3cc, 10cc, and 30cc syringes. Available in 2 oz jars for screen printing only.

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