RF SOLUTIONS LTD

TECHNICAL COATING SOLUTIONS

Conductive Product Information Sheet

EMC Shield RF3001 Compliant Silver Copper Hybrid Conductive Colloid

1. FEATURES:

EMC Shield Silver Copper Hybrid Colloid RF3001 has been formulated to meet the strictest control of electrical interference both radiation and susceptibility. It is formulated with specially prepared silver-coated copper particles and conductive resins to provide a conductive layer when applied by RF Solutions, compatible on to plastic, resins and metal substrates for a wide range of products. The highly conductive shield RF3001 when applied to specification provides an effective shielding against radiated radio and Electromagnetic interference (RFI & EMI) and in other application can act as a ground plane to protect against electrostatic discharge (ESD) and can be a cost effective option over silver.

2. CHARACTERISTICS:

A. Compatible with sensitive plastics.
B. Effective Shielding at 12.5Microns dry film thickness.
C. Passes UL Environmental Requirements UL746C.
D. Excellent Adhesion and Cohesion
E. Can be applied to most substrates for flexible applications use RF2002
F. Excellent Abrasion resistance scuff resistant.
G. Highly conductive finish achieved within a few hours.

3. TECHNICAL DATA:

A. Zero tolerance to loose particles within the film.
B. Light bronze in appearance.
C. Standard adhesion cross hatch test to ASTM D-3359-97 requirements.
D. Typical resistance at 12.5 microns dry film >0.015ΩOhms / sq.
E. Resistance tests A) continuity B) Ohms per sq using a Low Ohms tester
F. Recommended tester RS Low Ohms or Probe 2000 meters.
G. RCA Abrader passes 500+ Cycles @ 25 microns dry film.
H. Smooth and durable surface can be over coated with a desired top coat. I) Selective coating is achieved by using detailed masking.

4. ENVIRONMENTAL:

A. COSHH, RoSH and REACH Compliant material
B. Tested for long-term environmental stability to UL746C
C. Temperature ageing 7 days exposure to 85 deg C @ 85% R.H.
D. Temp Cycling - 10 cycles of, 75^{0}C for 1hr, Ambient for 1hr & -30^{0}C 1hr
E. Humidity - 35^{0}C for 56 days at 95% R.H.
F. No degradation of properties after Environmental testing

5. SHIELDING REQUIREMENT:

Generally the shielding performance of a conductive colloid increases when the resistance is at its lowest. A quick rule the higher the conductivity and lower resistance offers the best level of shielding, but this isn't always the case and the level of shielding required is a decision based on how the product performs measured against the attenuation of noise dB (decibels) created and or its susceptibility, it can also be a decision based on economics as the better the shield the higher the cost. Of course this may not be the case for ESD whereby the higher the resistance based on thinner coatings can offer better static discharge.

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6. QUALITY CONTROL:

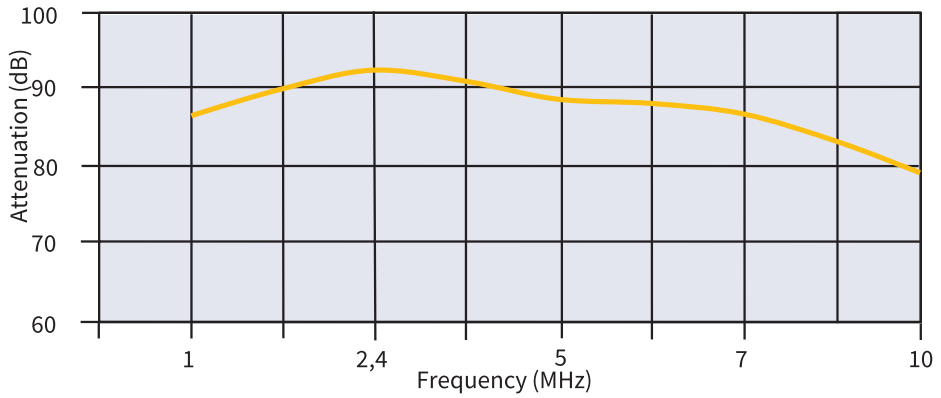
Personnel are trained to ensure that our conductive coatings are applied to the requirement of the customer and to the correct product measurements whilst maintaining coating quality, performance and cost. Coated products are routinely tested throughout the application process and through the material curing time.

Test A Continuity, specified critical point to point testing using probes
Test B Ohms per square measurement of a known area using block
C. Low Ohms testing - using a specified low ohms meter to 0.001Ω accuracy
D. Adhesion -Tape testing for bonding to product substrate
E. Cohesion - Tape testing for coating integrity
F. Thickness - using visual measurement aid or gauge shims when required
G. Visual - 100% inspection of masking and surface migration.
H. Process control carried out using PPAP and PCIS.
I. Gold sample EMR tested part used for reference and test points

7. SHIELDING PERFORMANCE:

This graph indicates the levels of performance of RF3001 over a frequency range up to 1.5 GHz to ASTM 4935-89 but has been tested up to 10 GHz to Military Standard MIL STD 285, typically 10 GHz protects at 78 dB plus.

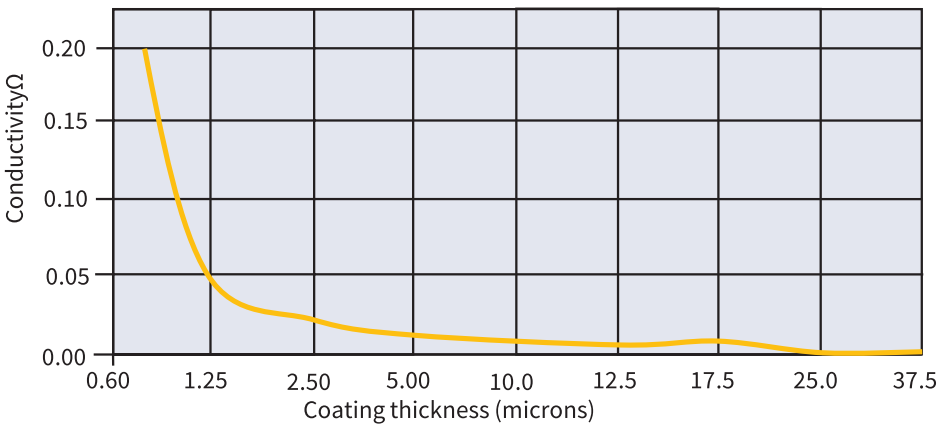
Shielding performance graph (ASTM 4935-89)



8. CONDUCTIVE PERFORMANCE:

This graph indicates the conductivity when testing sheet resistance to ASTM 254 ohms per square area and should be used in conjunction with point-to-point.

Conductive performance of RF 3001



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