RF SOLUTIONS LTD

TECHNICAL COATING SOLUTIONS

Conductive Product Information Sheet

EMC Shield RF1001-CN-S Nickel Conductive Colloid

1. FEATURES:

EMC Shield Nickel Colloid RF1001-CN-S has been formulated to meet the strictest control of electrical interference both radiation and susceptibility. It is formulated with specially prepared nickel granules 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 RF1001-CN-S 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).

2. CHARACTERISTICS:

A. Compatible with sensitive plastics.
B. Effective Shielding at 50 Microns dry film thickness.
C. Passes UL, FCC and VDE Requirements
D. Excellent Adhesion and Cohesion
E. Can be applied to most substrates
F. Excellent Abrasion resistance scuff resistant.
G. Highly conductive finish but has excellent ESD properties.

3. TECHNICAL DATA:

A. Zero tolerance to loose particles within the film.
B. Dark grey in appearance.
C. Standard adhesion cross hatch test to ASTM D-3359B requirements = 5B
D. Typical sheet resistance at 50 microns dry film >0.25ΩOhms / 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. Pencil Harness 9H @ 50 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 to USA F.C.C. Docket 20780, German V.D.E. 0871-0879 Regulations.
C. Temperature ageing 7 days exposure to 29.4^{0}C @ 95% R.H.
D. In Service temperature range from -40^{0}C to 95^{0}C
E. Attenuation 60-65 dB at 50 Microns per ASTM ES7-83
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.

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.

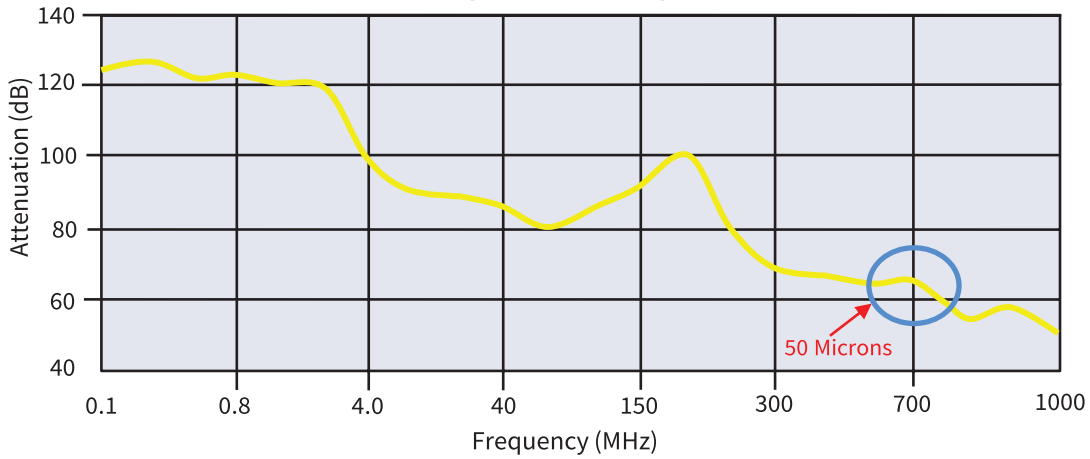
H. Process control carried out using PPAP and PCIS.

I. Gold sample EMR tested part used for reference and test points

7. SHIELDING PERFORMANCE:

This graph indicates the levels of performance of RF1001-CN-S over a frequency range up to 1.0 GHz to recognised test standard ASTM ES7-83.

Shielding performance graph



8. CONDUCTIVE PERFORMANCE:

This table indicates the achievable attenuation over a frequency range when testing sheet resistance to ASTM ES7-83.

Frequency MHZ	Attenuation dB	Frequency MHZ	Attenuation dB
0.1	125	100	87
0.2	127	150	90
0.4	122	200	100
0.6	123	250	82
1.0	120	300	71
2.0	118	400	70
4.0	100	600	67
6.0	90	700	68
15.0	90	800	56
40.0	87	900	58
60.0	82	1000	52

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