



CUMING MICROWAVE

C-RAM 369 and 369-RT

RoHS
Compliant

TECHNICAL BULLETIN 340-2

BRUSHABLE OR SPRAYABLE SURFACE WAVE SUPPRESSOR

C-RAM 369 is a high loss coating which can be brushed or sprayed on metal surfaces to attenuate surface waves. C-RAM 369 is a two component epoxy resin filled with particles having a high magnetic loss tangent in the microwave frequency range.

When an object is illuminated by radar, surface currents are induced to flow on the object, causing it to radiate energy in all directions. Radiation occurs primarily at discontinuities in the skin. These are joints, trailing edges and places where there is a change in contour. Application of C-RAM 369 to these areas will suppress the surface currents and significantly reduce the radiation. The edge of the coating is usually serrated or saw toothed to provide a transition.

C-RAM 369 can be applied to selected parts of antennas to adjust patterns and reduce side lobes. For example, the edge of a parabola can be coated for this purpose. Here again serration of the edge of the coating pointed toward the center is useful. The coating can also be used in transmission line systems as an attenuator.

The coating thickness is applied approx 0.1 – 0.2 mm at a time, and can be built up with multiple coats. Performance depends on wavelength as well as on thickness tapers across the surface. Surfaces should be prepared in accordance with standard

procedures. Cumming Microwave can supply information for specific applications.

TYPICAL PROPERTIES

Color: Grey
Maximum use temperature: 150°C
Specific Gravity: 3.5
Shore Durometer, D: 80
Volume Resistivity: $>10^{14}$ ohm-cm
Dielectric Strength: >4 kV/mm

AVAILABILITY

C-RAM 369 is sold in two component kits; Part A is the magnetically filled epoxy resin, and Part B is the curing agent. It is sold as:
3 pound (1.4 kg) PINT;
6 pound (2.7 kg) QUART;
and 25 pound (11.3 kg) GALLON.

INSTRUCTIONS FOR BRUSHING ON

1. Thoroughly mix the contents of the can of Part A, as settling may have occurred. Part B requires no mixing.

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2. For each 100 parts by weight of Part A add 6 parts of Part B. Mix thoroughly, preferably with a power mixer. Then add small quantities of lacquer thinner while mixing to get a desired viscosity for brushing. Brush on a thickness that will not flow on the object being coated. If greater thickness is needed, apply additional coats after the first has at least partially cured.

3. Allow 24 hours at room temperature for partial cure. Apply second coat, if needed, at this point. Allow 24 hours for each coat. Final cure is at 90°C for at least 3 hours.

INSTRUCTIONS FOR SPRAYING

Mix 100:6 proportions of Parts A and B, then add lacquer thinner, just as in the brush on instructions. A lower viscosity will be needed to achieve good spraying consistency. Shake spray can between each spray to avoid settling of filler particles. Do not continue to spray if coating is flowing on the object. Allow to cure for 24 hours, and continue with second coat. Mix can be stored in a freezer between uses, but allow mix to come to room temperature before using again. Mix thoroughly before using.

C-RAM 369-RT

C-RAM 369 coating is available in a room temperature curing version, designated C-RAM 369-RT. The cured properties of this material are essentially the same as those of C-RAM 369.

C-RAM 369-RT uses a different part B curing agent, which will begin reacting within 30 minutes of mixing, at room temperature, and will fully cure within 1 hour. One must factor in the tradeoffs between a fast cure and a limited pot life when considering this option.

The curing agent is an amine, and is designated as a Class 8 corrosive material by the DOT and IATA. Proper precautions must be taken when handling; consult the MSDS.

More details can be found in Application Note 300-11.

The information in this Technical Bulletin, although believed to be accurate, is not to be taken as a warranty for which Cuming Microwave assumes legal responsibility nor a permission or recommendation to practice any patented invention without license; it is offered for verification by the customer, who must make the final judgment of suitability for any application.