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Brief 69-10607

NASA TECH BRIEF

Sprayed Shielding of Plastic-Encapsulated Electronic Modules

The problem:

To develop a metallic coating for shielding of plastic-encapsulated electronic modules against radio-frequency interference.

The solution:

A metallic coating directly sprayed on the modules provides simple and reliable lightweight protection. A plasma-arc spray and/or an oxyacetylene-flame spray may be used; the former is preferred for its lower content of oxides in the coating. Aluminum and copper are the most effective metals.

How it's done:

Sharp edges on the module are first blunted to a radius of 0.01 in. or greater. The module is then blasted with No. 20 silicon carbide abrasive, portions not to be coated being masked; it is kept scrupulously clean pending coating within no more than 4 hr. Priming with 0.002 or 0.003 in. of flame-sprayed aluminum, followed by plasma spray to the required thickness, prevents the hairline cracking that mars plasma-spray coating of one encapsulant.

Prolonged exposures to high humidity, salt spray, and thermal cycling have not impaired the following coatings: 0.010 in. of aluminum, with flame-sprayed primer followed by plasma spray; 0.010 in. of flame-sprayed aluminum; 0.002 in. of flame-sprayed aluminum plus 0.005 in. of flame-sprayed 1010 steel plus 0.002 in. of flame-sprayed aluminum.

References:

1. Mackay, T. L.; Muller, A. N.: Tech. Note SM-48445, Astropower Laboratory, Feb. 1965.
2. Silvestri, R.; Mackay, T. L.; Muller, A. N.: Tech. Rept. 5/338, Astropower Laboratory, Nov. 1965.

Notes:

1. The process may interest manufacturers of electrical or electronic equipment.
2. No further documentation is available. Inquiries may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B69-10607

Patent status:

No patent action is contemplated by NASA.

Source: A. N. Muller of
Douglas Aircraft Company
under contract to
Marshall Space Flight Center
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Category 01