NASA TECH BRIEF

White Primer Permits a Corrosion-Resistant Coating of Minimum Weight

The problem:

To develop a white primer with properties as good as, or superior to, tinted primers for coating 2219 aluminum alloy with a base for a top coating such as MIL-E-5556A white flat enamel. The white primer must provide the alloy with high corrosion resistance and must combine with the enamel in a coating that affords good coverage with minimum film thickness.

The solution:

A formulation of pigments and vehicle that results in a white primer with superior properties of hiding and corrosion resistance.

How it's done:

A white primer of the following formulation gives excellent corrosion resistance and has superior hiding quality for use with 2219 aluminum alloy:

Pigment (40% by volume):
- Titanium dioxide (90% by volume)
- Zinc molybdate (10% by volume)

Vehicle (60% by volume):
- Safflower urethane varnish

Notes:

1. For spraying, the primer is reduced 200% with toluene.
2. The addition of 16 pounds of zirconium drier per 100 gallons of primer produced a coating which, at 0.1-mil thickness, permitted no corrosion of 2219 aluminum alloy panels with scratch marks after two weeks continuous exposure to both 5% and 20% salt spray.
3. The white primer permits excellent coverage with the MIL-E-5556A white flat enamel at a film thickness far less than would be required with a colored primer.
4. This primer could be used effectively wherever aluminum components are subjected to corrosive environments.
5. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama, 35812
   Reference: B66-10207

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

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