

Surface Condition for Good Adherence of Thermal Control Paints

Flight hardware often requires the application of thermal control paints. Very often the substrates to be painted are already coated with anodized or chromate coatings that will inhibit the adhesion of the thermal control paint. Therefore, these corrosion protective coatings must be removed before application of the paint.

Reasons for specifying a protective/inhibiting coating include protecting hardware that is to be exposed to a less than ideal environment for an extended period of time or the use of metals that are sensitive to exposure such as carbon steel and magnesium alloys.

Polyurethane Paints for Flight Hardware

Aeroglaze Z306, a flat black polyurethane paint, has been used successfully on flight hardware (metallic as well as non-metallic) for a number of years. The paint normally requires a room temperature cure but usually requires a post-cure bake to reduce the %TML to an acceptable level.

It provides excellent adhesion to a variety of surfaces, in many cases without a primer¹. Test results, however, show that the best adhesion to most surfaces is usually realized when Z306 is applied over the recommended primer.

The salient features of Aeroglaze Z306 are:

- low cost
- easy to apply by spraying or brushing
- requires only a room-temperature cure
- excellent adhesion to a variety of substrate materials over a wide temperature range
- %CVCM is usually acceptable but %TML usually requires a post-cure bake to be less than 1.00%
- good flexibility
- durable under normal handling
- relatively easy to clean

Aeroglaze A276, a high gloss white polyurethane paint has also been widely used on space flight hardware with success

The salient features of Aeroglaze A276 are:

- low cost compared to other acceptable white paints
- considerably lower outgassing than most other white paints
- easy to apply by spraying or brushing
- excellent adhesion to a variety of substrate materials over a wide temperature range
- good flexibility
- durable under normal handling
- easy to clean

It is important to note that Aeroglaze A276 has poor ultraviolet stability.