

## Black Anodizing On Aluminum 6061T6 & Chromating Technology

Space Applications Centre (SAC) of ISRO has developed electroplating processes for space hardware to achieve required surface engineering properties like EMI/EMC, electrical conductivity, non-conductivity, corrosion protection, solderability, emissivity and making a good base for Thermal Control Coatings. These processes are qualified for space use with very tight tolerances and subjected to various tests like visual inspection, adhesion test, environmental tests, and engineering property specific tests confirming to ASTM and MIL standards.

SAC has developed Black anodizing on Aluminum 6061-T6 alloy process which will find commercial and industrial applications. The black anodizing on aluminum alloy components such as boxes, cavities, posts etc. are used for optical as well as communication payloads. This coating is corrosion resistant has

- emissivity > 0.9
- solar absorptance > 0.93
- optical reflectance < 1%

Electrolytic black anodizing is a two-step process where anodizing is carried out in step 1 and step 2 involves electrolytic coloring. It has very good color fastness and optical properties. It is regularly used on satellite.

Components for satellites, at times, require bare white anodizing for corrosion protection only and at times need yellow chromating for basic protection of Aluminum with conductivity. There are instances where some part of the components need chromating for conductivity and other need black anodizing for emissivity.

### Plating Specifications

Black anodizing thickness:  $25 \pm 3$  microns



### Pre-requisites

- Basic Electroplating know-how
- Electroplating set up including electrolytic baths, chilling plants, power supplies etc.

### Applications

- Decorative
- Engineering / Industrial
- To enhance the emissivity and corrosion resistance of Aluminum alloy components.