



HARD ANODIZING:

Anodizing is the conversion coating of aluminum and its alloys to aluminum oxide by electrolysis. The process derives its name from the fact that the aluminum part to be coated becomes the anode in an electrolytic cell.

Basic Process:

The specimen to be treated is cleaned of all greases, oils, and contaminants either by vapor degreasing or by alkaline soak cleaning. After cleaning, the specimen is pickled to remove surface oxides.

Hard anodizing process uses a sulfuric acid bath containing 10-20% (wt) acid with additives. Typical operating temperatures of the bath vary from 0 - 10⁰C and current density ranges from 25 - 36 amps/ sq.ft. For good corrosion resistance, anodized coatings have to be sealed in boiling de-ionized water at 80 – 90⁰ C for 15 - 30 minutes.

FEATURES:

Hard-anodized coatings offer the following features:

ABRASION RESISTANCE: The hard anodizing process produces coatings from 25 microns to 100 microns thick. These coatings with the inherent hardness of aluminum oxide provide excellent wear resistance. An average layer thickness of 40 microns is recommended for parts subjected to bearing load wear conditions and atmospheric weathering extending for many years. (Ref. ASTM B 580).

CORROSION RESISTANCE: Sealed anodic coatings are highly resistant to atmospheric corrosion and salt-water attack.

DECORATIVE APPEARANCE: Anodic coatings give a smooth, lustrous surface appearance especially with extruded aluminum parts.

IMPROVED LUBRICITY: Anodized and honed surfaces improve the lubricity of the aluminum surface.

ELECTRICAL INSULATION: Aluminum oxide being a dielectric acts as an electrical insulation. The breakdown voltage of the anodic film varies depending upon the thickness of the film.

BLACK DYEING : It gives good aesthetic finish and helps to improve corrosion resistance by sealing in porosities.

EVALUATION OF HARD ANODIZED DelTech Controls ACTUATOR BODIES :

AVERAGE COATING THICKNESS - 40 MICRONS. (50% internal, 50% external).

(The coating thickness has to measure by the eddy current method - ref ASTM B244).

AVERAGE HARDNESS OF THE COATED LAYER – 400 - 500 HV.

CORROSION RESISTANCE (SALT SPRAY TEST) - 100 Hrs.