

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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Revised

CHEMICAL TREATMENT FOR ALUMINUM BASE ALLOYS Low Electrical Resistivity Coating

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION:
 - 2.1 To increase the corrosion resistance of aluminum or aluminum base alloys and to improve paint adhesion where a conductive coating is required.
 - 2.2 To improve corrosion resistance and paint adhesion properties of abraded or discontinuous anodized surfaces on aluminum or aluminum alloy parts.
3. PREPARATION: Before parts are placed in the coating solution, they shall have chemically clean surfaces prepared with minimum erosion, pitting, or unintended abrasion. Where alkaline cleaners are employed, very thorough water rinsing, preferably by spray, shall be employed after cleaning. Cleaning procedures recommended by the vendor of the processing chemicals should be followed closely.
4. PROCEDURE: Consists of immersion of the parts in a solution which will form a chemical coating of silicate or chromate for such time and at such temperature as will produce coatings meeting the requirements of Section 5, followed by rinsing and drying.
 - 4.1 Only processes which permit adequate solution control by chemical analysis shall be used.
 - 4.1.1 It shall be the responsibility of the vendor of proprietary processing chemicals to supply the purchaser with methods of analysis and directions for maintenance of the solutions.
5. TECHNICAL REQUIREMENTS:
 - 5.1 The coating shall have uniform appearance characteristic of the process used. Color may range from iridescent yellow to dark olive green, originating from chromic acid or from dichromate salts in the processing solution or in the final rinse.
 - 5.2 For control purposes, a sample of AMS 4037 sheet 0.040 in. thick and 3 x 10 in. (the 10 in. dimension being perpendicular to the direction of rolling) treated in accordance with Section 4 shall withstand 168 hr exposure to salt spray without corroding to the extent that would cause more than 5% decrease in tensile strength and 10% decrease in elongation from the average of 3 specimens cut from a duplicate treated but unexposed panel; in no case shall a corroded panel have tensile strength lower than 62,000 psi or elongation lower than 12%. The salt spray test shall be conducted in accordance with ASTM B117-49T. Tensile test specimens shall conform to ASTM E8-51T. The foregoing test is not required when material or parts that are treated in accordance with Section 4 are subsequently painted.

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