AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 2470C

Issued 1-23-40
Revised 7-1-47

ANODIC TREATMENT FOR ALUMINUM BASE ALLOYS
(Chromic Acid Process)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: To increase corrosion resistance and provide surfaces which will insure maximum paint adherence. This process is primarily applicable to wrought and cast aluminum and aluminum alloy parts containing 5% or less of copper; it may be used on alloys containing over 5% copper if suitable agitation and cooling of the solution is provided.

3. PREPARATION: Parts to be treated shall be cleaned, if necessary, in such a manner as to leave the surfaces free from grease, oil, soaps, alkalies, or other contamination. The operation may be accomplished with a hot, free-rinsing soap cleaner or by degreasing with a volatile solvent. Cleaning by a process giving a slightly etched but neutral surface is desirable.

4. CHROMIC ACID PROCESS: (a) Electrolyte.- Shall be an aqueous solution of technical grade chromic acid (99.5% minimum CrO_3) of suitable concentration. A chloride content in the solution of the equivalent of 0.2 g of NaCl per liter or a sulphate content equivalent to 0.5 g of H_2SO_4 per liter may result in unsatisfactory operation of the process and the solution should be maintained so that excessive contents of chloride or sulphate ions will not be present.

(b) Tank Material.- The electrolyte may be contained in a tank of steel.

(c) Temperature.- The electrolyte shall be operated at 91-99 F.

(d) Procedure.- The cleaned parts shall be made the anode in the electrolyte contained in a suitable metal tank which may also serve as the cathode. Direct current shall be applied and the voltage raised to 40 volts and held for 30 minutes. Alloys containing not over 5% copper, with total silicon plus copper of 9% or more, shall be treated for not less than 20 minutes for not less than 600 volt-minutes. Other conditions of time, temperature and voltage may be used, when approved.

(e) After anodizing, all parts may be rinsed in cold, clean water, and shall then be well rinsed for not less than 20 minutes in water at a temperature not lower than 170 F, or for not less than 10 minutes in water at a temperature not lower than 200 F. The pH value of the sealing water shall not exceed 6.8. The rinse should be as thorough as practicable but slight chromic acid stains are not considered objectionable.

5. OTHER PROCESSES: Other processes may be substituted for the chromic acid process if approved.