AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

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ELECTROLYTIC TREATMENT FOR MAGNESIUM BASE ALLOYS
Alkaline Type, Full Coat

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, to provide surfaces which will ensure maximum paint adherence, and to impart maximum abrasion resistance. This process is applicable to all cast and wrought magnesium alloys, after proper allowance has been made for dimensional change, but should not be used on parts which will be flexed in service. For maximum corrosion protection, resin sealing or painting over the coating is required.

3. PREPARATION: Parts to be treated shall be cleaned as necessary to leave the surfaces free from grease, oil, soap, alkali, and other contaminants.

4. SOLUTIONS: The electrolyte shall be an aqueous solution of the following composition in oz per gal, or its equivalent:

Potassium Hydroxide (KOH)	16.0 - 18.0
Aluminum Hydroxide (dried gel) ($Al(OH)_3$)	4.0 - 5.0
Potassium Fluoride (KF)	4.0 - 5.0
Tri-sodium Phosphate ($Na_3PO_4 . 12H_2O$)	4.0 - 5.0
Potassium Manganate (97% K_2MnO_4)	2.0 - 3.0

The temperature of the solution shall be maintained within the range of 70 - 95 F (21.1 - 35 C).

5. PROCEDURE:

5.1 Parts shall be suspended on both electrodes so that the surface areas of the parts on each electrode are approximately equal.

5.2 Parts shall be firmly attached to the racks; contact areas shall be kept to minimum size and, when practicable, shall be on surfaces not required to be coated. When parts are to be coated all over, electrical contact shall be on areas indicated on the drawing.

5.3 The parts shall, insofar as practicable, be hung so that no escaping gas can be entrapped during processing.

5.4 An alternating current shall be applied and the voltage raised as rapidly as possible, maintaining a current density of 15 - 30 amp per sq ft, based on the total area of exposed immersed metal. Completion is indicated by a minimum of 85 v across the work and a uniform brown color free from definite light areas when examined wet after rinsing in cold water. After treatment, parts shall be rinsed in cold water.

5.5 Unless otherwise specified, all parts, immediately following treatment as in 5.4, shall be immersed in the following aqueous solution at room temperature for 40 - 50 sec, after which parts shall be thoroughly drained and allowed to dry without rinsing.

Sodium Dichromate ($Na_2Cr_2O_7 . 2H_2O$)	2.5 - 3.0 oz per gal
Ammonium Bifluoride (NH_4HF_2)	13.0 - 13.5 oz per gal