AEROSPACE
MATERIAL SPECIFICATIONS

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

AMS 2478A
Superseding AMS 2478
Issued 9-15-57
Revised 9-30-66

ANODIC TREATMENT OF MAGNESIUM BASE ALLOYS
Acid 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 and abrasion resistance and to provide surfaces which will ensure maximum paint adherence. 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. Abrasion resistance is inferior to AMS 2476 but when similarly painted or resin coated, other properties are equivalent. Coating thickness is approximately 0.0015 in., of which approximately 0.001 in. is buildup.

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:

4.1 Electrolyte: Shall be an aqueous solution of one of the following compositions as applicable; concentrations are in oz per gallon:

	AC Process	DC Process
ø Ammonium Bifluoride (NH_4HF_2)	30.0 - 60.0	40.0 - 60.0
Sodium Dichromate ($Na_2Cr_2O_7 \cdot 2H_2O$)	6.7 - 16.0	6.7 - 16.0
Phosphoric Acid (85% H_3PO_4) (fluid measure)	6.5 - 14.0	6.5 - 14.0

The temperature of the electrolyte shall be maintained at a temperature within the range of 160 - 180 F (71.1 - 82.2 C).

4.2 Sealer: Shall be an aqueous solution containing 6 - 8 oz per gal of sodium tetra-silicate ($Na_2Si_4O_9$) ø (water glass) maintained at a temperature within the range of 200 - 212 F (93.3 - 100 C).

5. PROCEDURE:

5.1 Racking:

5.1.1 ø For AC processing, parts shall be suspended on both electrodes so that the surface areas of the parts on each electrode are approximately equal. For DC processing, parts shall be suspended on one electrode with the other electrode being separate steel plates except as noted in 5.2.

5.1.2 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.

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