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AERONAUTICAL MATERIAL SPECIFICATION

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PROTECTIVE TREATMENTS for MAGNESIUM BASE ALLOYS

1. PURPOSE: To increase corrosion resistance and provide surfaces which will insure maximum paint adherence.

2. PREPARATION: (a)The machined and fabricated parts shall be thoroughly cleaned of all traces of dirt, grease and oil before treatment. These surface contaminations may be removed by the vapor degreasing method, by alkaline cleaners, or by spraying with new organic solvent. The alkaline cleaners will produce a more uniform color.

(b)If rough castings exhibit visible surface oxidation before machining they shall be dipped for 10 seconds in a solution at room temperature containing by volume 8 parts of concentrated nitric acid, 2 parts of concentrated sulphuric acid, and 90 parts of water, then washed thoroughly in cold, running water followed by a dip in hot water and rapid drying. Tanks for this pickling bath may be ceramic, rubber-lined steel, aluminum, or other suitable material.

3. DICHROMATE PROCESS: (a)Solutions:

(1)A water solution containing 10 to 20% by weight of hydrofluoric acid (HF).

(2)A water solution containing 10% by weight of sodium dichromate ($Na_2Cr_2O_7.2H_2O$).

(b)Tank Materials: The hydrofluoric acid bath may be contained in lead-lined or rubber-lined tanks. The hot sodium dichromate bath may be contained in steel, aluminum, wood or other commonly used tank materials.

(c)Temperatures: Hydrofluoric acid solution shall be operated at room temperature. Sodium dichromate solution shall be operated at not less than 200°F and preferably at boiling temperature.

(d)Procedure:

(1)The cleaned parts shall be immersed for 5 minutes in the hydrofluoric acid solution then washed thoroughly in cold running water.

(2)Parts shall then be immersed for at least 45 minutes in the sodium dichromate solution, rinsed thoroughly in cold running water followed by a dip in hot water and rapid drying with a clean air blast.

Properly applied finish will vary from dark brown to black, depending upon the alloy composition, bath condition, and time of treatment.

4. CHROME PICKLE PROCESS: (a)Solution:

Sodium Dichromate ($Na_2Cr_2O_7.2H_2O$)	1.5 pounds
Nitric Acid (HNO_3 - Sp. Gr. 1.42)	1.5 pints
Water to Make	1 gallon

(b)Tank Material: The Chrome Pickle bath may be contained in pure aluminum, ceramic, or stainless steel tanks.