Society of Automotive Engineers, Inc.
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AEROSPACE MATERIAL SPECIFICATION

AMS 2421A
Superseding AMS 2421

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PLATING MAGNESIUM FOR SOLDERABILITY
Zinc Immersion Process

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

2. APPLICATION: Primarily to prepare magnesium parts for soft soldering.

3. PREPARATION:

3.1 Impregnation of castings, when required or permitted, shall be done prior to plating. All excess impregnant shall be completely removed prior to curing or baking.

3.2 Unless otherwise specified, all machining shall be completed prior to cleaning and plating.

4. PROCEDURE: Consists of thorough cleaning of the magnesium surfaces, pickling, and activating, followed by application of a zinc immersion coating, a copper strike, a copper plate, and an electrodeposit of tin.

4.1 Cleaning and Pickling: Prior to plating, the parts shall be cleaned to remove all grease, oil, and other surface contamination in accordance with the following procedure.

4.1.1 Vapor degrease when visible coatings of heavy oil or grease are present.

4.1.2 Cathodically clean parts in a suitable alkaline aqueous solution at 200 F ± 10 (93.3 C ± 5.6), using a current density of 10 - 40 asf at 6 volts. The solution shall have a pH of 11.0 or higher.

4.1.3 Rinse in cold running water.

4.1.4 Acid pickle in an aqueous solution suitable for the alloy and form of material being processed.

4.1.5 Rinse in cold running water.

4.2 Activation and Zinc Immersion Coating: Shall be performed by the following procedure or other suitable method.

4.2.1 Immerse in an aqueous solution containing 13 - 14 oz per gal ammonium bifluoride and 1.50 - 1.75 pt per gal phosphoric acid at 80 F ± 10 (26.7 C ± 5.6) for 30 - 120 seconds.

4.2.2 Rinse in cold running water.

4.2.3 Providing mild agitation to the bath, immerse in a zinc immersion solution containing 3 - 4.5 oz per gal zinc sulfate monohydrate, 13 - 18 oz per gal tetrasodium pyrophosphate, and 0.67 oz per gal sodium fluoride or 0.4 oz or more per gal lithium fluoride at 155 F ± 5 (68.3 C ± 2.8) for 3 - 15 minutes. The pH of the solution shall be maintained at 10.0 - 10.6 by additions of sodium carbonate.

4.2.4 Rinse in cold running water.