



AEROSPACE MATERIAL SPECIFICATION

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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 $200\text{ F} \pm 10$ ($93.3\text{ C} \pm 5.6$), 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 $80\text{ F} \pm 10$ ($26.7\text{ C} \pm 5.6$) 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 $155\text{ F} \pm 5$ ($68.3\text{ C} \pm 2.8$) 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.

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