

FED. SUPPLY CLASS

MFFP

1.0 SCOPE

- 1.1 This specification outlines the procedures to be followed in the cadmium plating of fasteners and fittings fabricated of non-corrosion resistant steel in the heat treat ranges of 180 ksi and higher, and is designed to produce parts in which hydrogen embrittlement is minimized.
- 1.2 This specification shall be applicable only on drawings and/or specifications wherein it is so noted.

2.0 REQUIREMENTS

2.1 Thickness

2.1.1 The minimum thickness of cadmium plate for fasteners shall be .0003 inch and the maximum thickness shall be .0005 inch. For other parts, the minimum thickness shall be .0003 inch.

2.1.2 Holes, recesses and other areas where a controlled deposit cannot be normally obtained and which cannot be touched by a sphere .75 inches in diameter, shall not be subject to a thickness requirement, but shall show evidence of coating. There shall be no visible bare areas.

2.2 Material

2.2.1 The basis material shall be substantially free from flaws or defects that will be detrimental to the protective value of the plate.

2.2.2 Parts which have been machined, ground (except for thread major grinding), cold formed, or cold straightened after heat treatment shall be stress relieved for two hours at a maximum temperature of 50° below the tempering temperature specified in AMS2759 for the applicable Class A alloy steel. Parts shall be free from oil and grease before stress relieving.

2.3 Plating

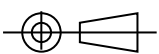
2.3.1 The parts shall be plated only by the process listed herein.

2.3.2 The cadmium deposit shall be smooth, fine grained, adherent and free from blisters, pits, nodules, indications of burning and other visible defects, and shall be deposited directly on to the basis metal. Darkened plate in recesses shall not be cause for rejection. Superficial staining or discoloration resulting from rinsing or baking shall not be cause for rejection.

2.3.3 The quality of the cadmium plate shall be such that when a test specimen is subjected to the salt spray test specified it shall fulfill the requirements of Paragraph 2.3.3.1. Test parts plated to a thickness of .0003 inch on significant surfaces shall withstand 96 hours of salt spray test.

2.3.3.1 The appearance of more than six corroded areas that are visible to the unaided eye, or of any corroded areas larger than 1/16 inches in diameter, shall be cause for rejection. For purposes of this requirement, a corroded area is defined as exposure or corrosion of the basis metal.

THIRD
ANGLE
PROJECTION



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REVISION
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PROCUREMENT
SPECIFICATION

TITLE

CLASSIFICATION
SPECIFICATION

NONE

**PLATING, HIGH STRENGTH STEELS,
CADMIUM**



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SHEET 1 OF 3
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THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME
PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST
REVISION DATE.

FORM 12-02

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- 2.4 Preparation
 - 2.4.1 Scale or oxide removal shall be by mechanical means only.
 - 2.4.2 Vapor degreasing and/or anodic or soak alkaline cleaning shall be used for the removal of oil, grease or dirt.
 - 2.4.2.1 When anodic or soak alkaline cleaning is used, parts shall be water rinsed.
 - 2.4.3 Pickling or cathode electrolytic treatments are prohibited at all times except that a 10 second maximum dip in 1.5% nitric, sulfuric or fluoboric acid may be used for pre-plate etching to insure plate adherence, and shall be followed immediately by a water rinse.
- 2.5 Process
 - 2.5.1 Plating shall be performed by the fluoborate process with the following solution constituents and conditions:
 - 2.5.1.1 Cadmium fluoborate – 35 to 38 oz/gal by weight.
 - 2.5.1.2 Ammonium fluoborate – 11 to 13 oz/gal.
 - 2.5.1.3 Distilled water or demineralized water.
 - 2.5.1.4 The addition of brightening agents compatible with cadmium fluoborate plating is acceptable, but shall not exceed 5% of bath concentration.
 - 2.5.1.5 Temperature, 70 °F to 80 °F.
 - 2.5.1.6 Current density, 20 to 50 a.s.f.
 - 2.5.1.7 pH range is 3.2 to 4.0 with adjustment being made with fluoboric acid, ammonia, or ammonium hydroxide.
 - 2.5.2 After plating, processing shall be as follows:
 - 2.5.2.1 Rinse with tap water for a minimum of 10 seconds.
 - 2.5.2.2 10 second dip in chromic acid 3% to 5% by weight.
 - 2.5.2.3 Rinse with hot water (140 °F minimum) and dry immediately.
 - 2.5.2.4 Unless otherwise specified parts shall be baked for a minimum of 23 hours after plating at 375 ± 25 °F in a circulating air oven.
 - 2.5.2.5 The bake furnace pyrometry shall conform to AMS2750. All parts shall be baked continuously at temperature, within the specified range. Interruptions for loading and unloading parts shall be permitted provided the time between the opening of the furnace door, and the re-establishment of the specified baking temperature, is not used to determine the total cumulative bake time. The specified baking temperature shall be considered to be re-established when all control, indicating and recording thermocouples reach the specified baking temperature.
 - 2.5.2.6 Parts shall be baked as soon as practicable, but not later than four (4) hours after plating.
 - 2.5.2.7 All plated parts shall receive a supplementary chromate treatment after baking. This treatment shall be applied in accordance with the Type II supplementary coating of AMS-QQ-P-416, and produce a continuous smooth protective film, distinctly colored iridescent bronze to brown.

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