



<b>AEROSPACE MATERIAL SPECIFICATION</b>	<b>AMS-QQ-P-416™</b>	<b>REV. G</b>
	Issued 2000-07 Revised 2022-09	
	Superseding AMS-QQ-P-416F	
Plating, Cadmium (Electrodeposited)		

#### RATIONALE

AMS-QQ-P-416G adds grade in addition to type to ordering information, corrects the maximum service temperature for Grade A (1.3.1), changes the hydrogen embrittlement relief requirement for Type IIB such that it can be performed before or after the conversion coating (3.2.7), added plate thickness requirement for the adhesion test (4.6.2), and changes the alloy for the corrosion resistance test specimens (Table 1, Note 1).

#### NOTICE

ORDERING INFORMATION: The following information shall be provided to the plating processor by the purchaser.

1. Purchase order shall specify not less than the following:

- AMS-QQ-P-416G
- Type and grade (see 1.3.1)
- Class (see 1.3.2)
- Thickness of plating (see 3.3.1)
- Quantity of pieces to be plated
- Lot hydrogen embrittlement testing if required and sampling (see 4.4.2.3)
- Basis metal to be plated
- Tensile strength or hardness of the basis metal (see 5.2.5)
- Pre-plate stress relief to be performed by plating processor (time and temperature) if different from 3.2.1
- Stress and embrittlement relief temperature if the upper operating temperature is less than 275 °F (135 °C) (see 3.2.1.6 and 3.2.7.1)
- Special features, geometry, or processing present on components that requires special attention by the plating processor
- Hydrogen embrittlement relief to be performed by plating processor (parameters or reference document) if different from 3.2.4

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- If steel components were machined, ground, cold formed or cold straightened after heat treatment (see 3.2.1)
  - Statement that all heat treatments and mechanical operations such as machining, brazing, welding, forming, and perforating have been completed prior to plating (see 3.2.3)
  - Optional: Fixture/electrical contact locations, when not specified (see 3.2.5)
  - Optional: Hydrogen embrittlement relief testing of each lot (see 4.4.2.3)
  - Optional: Process approval requirement (see 4.7.1)
  - Optional: Processing records requirement (see 4.7.2)
2. Components manufacturing operations such as heat treating, forming, joining, and media finishing can affect the condition of the substrate for plating, or, if performed after plating, could adversely affect the plated component. The sequencing of these types of operations should be specified by the cognizant engineering organization or purchaser and is not controlled by this specification.

## 1. SCOPE

### 1.1 Purpose

This specification covers the requirements for electrodeposited cadmium plating.

### 1.2 Application

The electrodeposited cadmium platings covered by this specification are intended for use as corrosion protective coatings. Unless otherwise specified, components heat treated to an ultimate tensile strength greater than 200 ksi (1379 MPa) or harder than 43 HRC should not be plated in accordance with this specification. Section 5 contains more information about the appropriateness of this process and the coating material. It also describes alternatives to cadmium plating.

### 1.3 Classification

Cadmium plating shall be of the following types and classes, as specified (see ordering information):

#### 1.3.1 Types

- I - As plated
- II - With supplementary chromate treatment (see 3.2.9.1 and 3.2.9.2)
  - Grade A - Hexavalent chromate treatment, maximum service temperature 150 °F (66 °C)
  - Grade B - Hexavalent chrome free treatment, maximum service temperature 375 °F (191 °C)
- III - With supplementary phosphate treatment (see 3.2.9.3)

1.3.1.1 For Type II plating, if no grade is specified, Grade A shall be supplied. Processors shall have the option to use Grade B if permitted by the cognizant engineering organization.

1.3.1.2 Type II, Grade A may be listed as Type IIA and Type II Grade B may be listed as Type IIB; the terms are equivalent.

#### 1.3.2 Classes

- 1 - 0.0001 inch (0.0127 mm), minimum
- 2 - 0.0003 inch (0.0076 mm), minimum
- 3 - 0.0002 inch (0.0051 mm), minimum