



Standard Specification for Coatings of Cadmium Mechanically Deposited¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers the requirements for a coating of cadmium mechanically deposited on metal products. The coating is provided in various thicknesses up to and including 12 μm.

1.2 Mechanical deposition greatly reduces the risk of hydrogen embrittlement and is suitable for coating bores and recesses in many parts that cannot be conveniently electroplated (see [Appendix X3](#)).

1.3 Cadmium coatings are usually applied to provide engineering properties and corrosion resistance. The performance of a cadmium coating depends largely on its thickness and the kind of environment to which it is exposed. Without proof of satisfactory correlation, accelerated tests such as the salt spray (fog) test cannot be relied upon to predict performance in other environments, nor will these serve as comparative measures of the corrosion resistance afforded by coatings of different metals. Thus, although there is a marked superiority of cadmium coatings over zinc coatings of equal thickness in the salt spray test, this is often not the case under conditions of use, so that further testing in the service environment should be conducted.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see [1.5](#) and [1.6](#).

1.5 **Warning**—Cadmium is toxic and must not be used in a coating for articles that can come into contact with food or beverages, or for dental or other equipment that can be inserted into the mouth. Consult appropriate agencies for regulations in this connection.

1.6 **Warning**—Because of the toxicity of cadmium vapors and cadmium oxide fumes, cadmium-coated articles must not

be used at temperatures of 320°C and above. They must not be welded, spot-welded, soldered, or otherwise strongly heated without adequate ventilation that will efficiently remove all toxic fumes.

2. Referenced Documents

2.1 ASTM Standards:²

- [B117 Practice for Operating Salt Spray \(Fog\) Apparatus](#)
- [B183 Practice for Preparation of Low-Carbon Steel for Electroplating](#)
- [B242 Guide for Preparation of High-Carbon Steel for Electroplating](#)
- [B322 Guide for Cleaning Metals Prior to Electroplating](#)
- [B487 Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of Cross Section](#)
- [B499 Test Method for Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals](#)
- [B567 Test Method for Measurement of Coating Thickness by the Beta Backscatter Method](#)
- [B602 Test Method for Attribute Sampling of Metallic and Inorganic Coatings](#)
- [B697 Guide for Selection of Sampling Plans for Inspection of Electrodeposited Metallic and Inorganic Coatings](#)
- [B762 Test Method of Variables Sampling of Metallic and Inorganic Coatings](#)
- [F1470 Practice for Fastener Sampling for Specified Mechanical Properties and Performance Inspection](#)

3. Classification

3.1 *Classes*—Cadmium coatings are classified on the basis of thickness, as follows:

Class	Minimum Thickness, μm
12	12
8	8
5	5

¹ This specification is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.06 on Soft Metals.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.