



Standard Specification for Electrodeposited Coatings of Cadmium¹

This standard is issued under the fixed designation B766; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

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 electrodeposited cadmium coatings on products of iron, steel, and other metals.

NOTE 1—Cadmium is deposited as a coating principally on iron and steel products. It can also be electrodeposited on aluminum, brass, beryllium copper, copper, nickel, and powder metallurgy parts.

1.2 The coating is provided in various thicknesses up to and including 25 μm either as electrodeposited or with supplementary finishes.

1.3 Cadmium coatings are used for corrosion resistance and for corrosion prevention of the basis metal part. The as-deposited coating (Type I) is useful for the lowest cost protection in a mild or noncorrosive environment where early formation of white corrosion products is not detrimental or harmful to the function of a component. The prime purpose of the supplementary chromate finishes (Types II and III) on the electroplated cadmium is to increase corrosion resistance. Chromating will retard or prevent the formation of white corrosion products on surfaces exposed to various environmental conditions as well as delay the appearance of corrosion from the basis metal.

1.4 Cadmium plating is used to minimize bi-metallic corrosion between high-strength steel fasteners and aluminum in the aerospace industry. Undercutting of threads on fastener parts is not necessary as the cadmium coating has a low coefficient of friction that reduces the tightening torque required and allows repetitive dismantling.

1.5 Cadmium-coated parts can easily be soldered without the use of corrosive fluxes. Cadmium-coated steel parts have a lower electrical contact resistance than zinc-coated steel. The lubricity of cadmium plating is used on springs for doors and latches and for weaving machinery operating in high humidity. Corrosion products formed on cadmium are tightly adherent. Unlike zinc, cadmium does not build up voluminous corrosion

products on the surface. This allows for proper functioning during corrosive exposure of moving parts, threaded assemblies, valves, and delicate mechanisms without jamming with debris.

2. Referenced Documents

2.1 The following standards form a part of this document to the extent referenced herein.

2.2 *ASTM Standards*:²

A165 Specification for Electrodeposited Coatings of Cadmium on Steel (Withdrawn 1987)³

B117 Practice for Operating Salt Spray (Fog) Apparatus

B183 Practice for Preparation of Low-Carbon Steel for Electroplating

B201 Practice for Testing Chromate Coatings on Zinc and Cadmium Surfaces

B242 Guide for Preparation of High-Carbon Steel for Electroplating

B253 Guide for Preparation of Aluminum Alloys for Electroplating

B254 Practice for Preparation of and Electroplating on Stainless Steel

B281 Practice for Preparation of Copper and Copper-Base Alloys for Electroplating and Conversion Coatings

B320 Practice for Preparation of Iron Castings for Electroplating

B322 Guide for Cleaning Metals Prior to Electroplating

B343 Practice for Preparation of Nickel for Electroplating with Nickel

B374 Terminology Relating 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

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.

Current edition approved March 1, 2015. Published April 2015. Originally approved in 1986. Last previous edition approved in 2008 as B766 – 86 (2008). DOI: 10.1520/B0766-86R15.

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.

³ The last approved version of this historical standard is referenced on www.astm.org.