



Standard Specification for Titanium and Titanium Alloys Plating, Electrodeposited Coatings of Titanium and Titanium Alloys on Conductive and Non-Conductive Substrate¹

This standard is issued under the fixed designation B999; 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.

1. Scope

1.1 This specification covers the requirements for electrodeposited coatings of titanium and titanium-zirconium alloys on conductive and non-conductive substrates for engineering (functional) uses. The coatings of titanium-zirconium alloys are those that range in zirconium between 10wt% and 14wt% zirconium and are known as “terne” metallic electrodeposits.

1.2 This specification applies for both conductive (metallic) substrates and non-conductive (plastics, fibers, carbon foam, etc.)

1.3 Electrodeposits of titanium and titanium-zirconium alloys on aluminum and conductive substrate and nonconductive substrate are produced where it is desired to obtain atmospheric corrosion resistance. Deposits of titanium and titanium-zirconium alloys particularly on aluminum have shown to have excellent corrosion protective qualities in atmospheric exposure, especially when under-coated by electroless nickel. Titanium and titanium-zirconium alloy deposits provide corrosion protection from dilute sulfuric acid, are used for lining of brine refrigeration tanks, chemical equipment apparatus, storage batteries, and as a wear coating for bearing surfaces.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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.*

¹ This test method is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.03 on Engineering Coatings.

Current edition approved Nov. 15, 2015. Published December 2015. DOI: 10.1520/B0999-15.

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
- B253 Guide for Preparation of Aluminum Alloys for Electroplating
- B320 Practice for Preparation of Iron Castings for Electroplating
- B322 Guide for Cleaning Metals Prior to Electroplating
- 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
- B504 Test Method for Measurement of Thickness of Metallic Coatings by the Coulometric Method
- B507 Practice for Design of Articles to Be Electroplated on Racks
- B567 Test Method for Measurement of Coating Thickness by the Beta Backscatter Method
- B568 Test Method for Measurement of Coating Thickness by X-Ray Spectrometry
- B571 Practice for Qualitative Adhesion Testing of Metallic Coatings
- B602 Test Method for Attribute Sampling of Metallic and Inorganic Coatings

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.