



Designation: B 893 – 98

Specification for Hard-Coat Anodizing of Magnesium for Engineering Applications¹

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1. Scope

1.1 This specification covers requirements for electrolytically formed oxide coatings on magnesium and magnesium alloy parts where appearance, abrasion resistance, and protection against corrosion are important.

1.2 *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.*

2. Referenced Documents

2.1 ASTM Standards:

- B 117 Practice for Operating Salt Spray (Fog) Apparatus²
- B 244 Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments³
- B 322 Practice for Cleaning Metals Prior to Electroplating⁴
- B 374 Terminology Relating to Electroplating⁴
- B 487 Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section
- B 537 Practice for Rating of Electroplated Panels Subjected to Atmospheric Exposure⁴
- B 602 Method of Attribute Sampling of Electrodeposited Metallic Coatings and Related Finishes⁴
- B 697 Guide for Selection of Sampling Plans for Inspection of Electro Deposited Metallic and Inorganic Coatings
- B 0762 Method of Variables Sampling of Metallic and Inorganic Coatings
- D 3951 Practice for Commercial Packaging⁵

2.2 ISO Standard:

ISO 2080 Electroplating and Related Processes - Vocabulary⁶

3. Terminology

3.1 *Definitions*—For definitions of terms relating to this specification see Terminology B 374.

3.1.1 *anodizing*—an electrolytic oxidation process in which the surface of a metal, when anodic, is converted to a coating having desirable protective or functional properties.

3.1.2 *hard coat*—in anodizing magnesium, an anodic oxide coating on magnesium with a higher apparent density and thickness, and a greater resistance to wear than the base metal.

4. Classification

4.1 *Coating Designation*—Thickness.

4.1.1 Minimum Thickness of 20 μm.

4.2 TYPE - Post Treatments.

4.2.1 TYPE A—no post treatment.

4.2.2 TYPE B—Purchaser Specified.

5. Ordering Information - (to be supplied by the purchaser to the producer.)

5.1 *Alloy Designation*—When ordering articles anodized in accordance with this specification, the purchaser shall state, the alloy designation number.

5.2 *Appearance*—Unless otherwise specified by the purchaser, an off-white color shall be acceptable for TYPE A coating. The purchaser shall specify the color and surface appearance required for TYPE B coatings. All coatings shall be uniform in color and free from stains. Alternatively, samples showing the required finish, or range of finishes, shall be supplied or approved by the purchaser. When required, the basis material may be subjected to such mechanical polishing as may be required to yield the desired final surface characteristics.

5.3 *Significant Surface*—The areas of the article covered by the coating, for which the coating is essential for service or appearance or both.

¹ This specification is under the jurisdiction of ASTM Committee B-08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.07 on Chemical Conversion Coatings.

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² Annual Book of ASTM Standards, Vol. 03.02.

³ Annual Book of ASTM Standards, Vol. 02.01.

⁴ Annual Book of ASTM Standards, Vol. 02.05.

⁵ Annual Book of ASTM Standards, Vol. 15.09.

⁶ Available from International Organization for Standardization, 1 Rue de Varembe, Case Postale 56, CH-1211 Geneva 20, Switzerland.