



Standard Specification for Autocatalytic Nickel over Autocatalytic Copper for Electromagnetic Interference Shielding¹

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1. Scope

This specification presents the requirements for multilayer coatings of autocatalytic nickel-phosphorus over autocatalytic copper on metallic and polymeric substrates. The coating system is intended to provide electromagnetic interference (EMI) protection properties or electrostatic discharge (ESD) protection to parts fabricated from either polymeric or metallic materials.

2. Referenced Documents

2.1 ASTM Standards:

- A 919 Terminology Relating to Heat Treatment of Metals²
- B 183 Practice for Preparation of Low-Carbon Steel for Electroplating³
- B 242 Practice for Preparation of High-Carbon Steel for Electroplating³
- B 252 Guide for Preparation of Zinc Alloy Die Castings for Electroplating and Conversion Coatings³
- B 253 Guide for Preparation of Aluminum Alloys for Electroplating³
- B 320 Practice for Preparation of Iron Castings for Electroplating³
- B 322 Practice for Cleaning Metals Prior to Electroplating³
- B 374 Terminology Related to Electroplating³
- B 504 Test Method for Measurement of Thickness of Metallic Coatings by the Coulometric Method³
- B 532 Specification for the Appearance of Electroplated Plastic Surfaces³
- B 533 Test Method for Peel Strength of Electroplated Plastics³
- B 553 Test Method for Thermal Cycling of Electroplated Plastics⁴
- B 554 Practice for Measurement of Thickness of Metallic Coatings on Nonmetallic Substrates⁵
- B 567 Test Method for Measurement of Coating Thickness by the Beta Backscatter Method³

¹ This specification is under the jurisdiction of ASTM Committee B-08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.08.01 on Engineering Coatings.

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² *Annual Book of ASTM Standards*, Vol 01.01.

³ *Annual Book of ASTM Standards*, Vol 02.05.

⁴ Discontinued 1992; see 1991 *Annual Book of ASTM Standards*, Vol .

⁵ Discontinued 1987; Replaced by B 659.

B 568 Test Method for Coating Thickness by X-Ray Spectrometry³

B 602 Test Method for Attribute Sampling of Metallic and Inorganic Coatings³

B 697 Guide for Selection of Sampling Plans for Inspection of Electrodeposited Metallic and Inorganic Coatings³

B 727 Practice for Preparation of Plastics Materials for Electroplating³

B 733 Specification for Autocatalytic Nickel-Phosphorus Coatings on Metals³

D 3330/D 3330M Test Methods for Peel Adhesion of Pressure-Sensitive Tape at 180° Angle⁶

D 3359 Test Methods for Measuring Adhesion by Tape Test⁷

D 4935 Test Method for Measuring the Electromagnetic Shielding Effectiveness of Planar Materials⁸

2.2 Military Standard:

MIL-STD-461 Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference⁹

3. Terminology

3.1 *Definitions*—Many of the terms used in this specification can be found in Terminologies A 919 or B 374.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *significant surfaces, n*—these surfaces are classified as primary, secondary, nonsignificant, and coating-free surfaces.

3.2.1.1 *coating-free areas, adj*—areas specified on part drawings or suitably marked samples.

3.2.1.2 *nonsignificant surfaces, adj*—all holes, recesses, and other areas where a controlled deposit cannot be obtained under normal coating conditions and that cannot be touched with a 20-mm diameter ball shall be considered nonsignificant surfaces unless otherwise specified on part drawings or suitably marked samples.

3.2.1.3 *primary significant surface, adj*—all mating surfaces and those other surfaces specified on part drawings or suitably marked samples.

3.2.1.4 *secondary significant surfaces, adj*—all surfaces,

⁶ *Annual Book of ASTM Standards*, Vol 15.09.

⁷ *Annual Book of ASTM Standards*, Vol 06.01.

⁸ *Annual Book of ASTM Standards*, Vol 10.02.

⁹ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave. Philadelphia, PA 19111-5094, Attn: NPODS.