



Designation: B 580 – 79 (Reapproved 2004)

Standard Specification for Anodic Oxide Coatings on Aluminum¹

This standard is issued under the fixed designation B 580; 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 Department of Defense.

1. Scope

1.1 This specification covers requirements for electrolytically formed porous oxide coatings on aluminum and aluminum alloy parts in which appearance, abrasion resistance, electrical properties, and protection against corrosion are important. Nonporous, barrier layer anodic coatings used for electrical capacitors are not covered. Seven types of coatings as shown in Table 1 are provided. Definitions and typical examples of service conditions are provided in Appendix X1.

NOTE 1—It is recognized that uses exist in which modifications of the coatings covered by this specification may be required. In such cases the particular properties desired by the purchaser should be the subject of agreement between the purchaser and the manufacturer.

2. Referenced Documents

2.1 ASTM Standards:²

- B 110 Test Method for Dielectric Strength of Anodically Coated Aluminum³
- B 117 Practice for Operating Salt Spray (Fog) Testing Apparatus
- B 136 Test Method for Measurement of Stain Resistance of Anodic Coatings on Aluminum
- B 137 Test Method for Measurement of Coating Mass per Unit Area on Anodically Coated Aluminum
- 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 Instruments
- B 368 Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)
- B 457 Test Method for Measurement of Impedance of Anodic Coatings on Aluminum
- B 487 Test Method for Measurement of Metal and Oxide

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

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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.

³ Withdrawn.

TABLE 1 Anodic Coatings Descriptions

NOTE 1—Hard coatings may vary in thickness from 12 μm to more than 100 μm . If the thickness of Type A is not specified, it shall be 50 μm min. Type A coatings will not be sealed unless so specified.

Type	Coating (Industry) Description	Minimum Film Thickness (μm)
A	Engineering Hard Coat	50
B	Architectural Class I	18
C	Architectural Class II	10
D	Automotive—Exterior	8
E	Interior—Moderate Abrasion	5.0
F	Interior—Limited Abrasion	3
G	Chromic Acid	1

Coating Thicknesses by Microscopical Examination of a Cross Section

B 538 Method of FACT (Ford Anodized Aluminum Corrosion Test)³

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

D 658 Test Method for Abrasion Resistance of Organic Coatings by Air Blast Abrasive³

E 429 Test Method for Measurement and Calculation of Reflecting Characteristics of Metallic Surfaces Using Integrating Sphere Instruments³

E 430 Test Methods for Measurement of Gloss of High-Gloss Surfaces by Goniophotometry³

2.2 Other Standards:

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes⁴

MIL-STD-414 Sampling Procedures and Tables for Inspection by Variables for Percent Defective⁴

3. Manufacture

3.1 Defects in the surface of the basis metal, such as scratches, porosity, inclusions, roll and die marks, cold shuts, and cracks, will adversely affect the appearance and performance of applied coatings despite the observance of best anodizing practices. Accordingly, defects in the coating that result from such conditions shall not be cause for rejection.

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