NOTICE: This standard has either been superceded and replaced by a new version or discontinued.
Contact ASTM International (www.astm.org) for the latest information.

Designation: B 659 – 90 (Reapproved 1997)

Standard Guide for Measuring Thickness of Metallic and Inorganic Coatings[1]

This standard is issued under the fixed designation B 659; 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 guide outlines the methods for measuring the thickness of many metallic and inorganic coatings including electrodeposited, mechanically deposited, vacuum deposited, anodic oxide and chemical conversion coatings.

1.2 This guide is limited to tests considered in ASTM standards and does not cover certain tests that are employed for special applications.

1.3 *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 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[2]

B 487 Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section[2]

B 499 Test Method for Measurement of Coating Thicknesses by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals[2]

B 504 Test Method for Measurement of Thickness of Metallic Coatings by the Coulometric Method[2]

B 530 Test Method for Measurement of Coating Thicknesses by the Magnetic Method: Electrodeposited Nickel Coatings on Magnetic and Nonmagnetic Substrates[2]

B 567 Test Method for Measurement of Coating Thickness by the Beta Backscatter Method[2]

B 568 Test Method for Measurement of Coating Thickness by X-Ray Spectrometry[2]

B 588 Test Method for Measurement of Thickness of Transparent or Opaque Coatings by Double-Beam Interference Microscope Technique[2]

B 681 Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Transparent Coatings on Opaque Surfaces Using the Light-Section Microscope[2]

B 767 Guide for Determining Mass Per Unit Area of Electrodeposited and Related Coatings by Gravimetric and Other Chemical Analysis Procedures[2]

2.2 *ISO Standards:*

1463 Metal and Oxide Coatings—Measurement of Thickness by Microscopic Examination of Cross Sections[3]

2128 Surface Treatment of Metals—Anodization (Anodic Oxidation) of Aluminum and Its Alloys—Measurement of the Thickness of Oxide Coatings—Nondestructive Measurement by Light Section Microscope[3]

2176 Petroleum Products Lubricating Grease Determination of Dropping Point[3]

2177 Metallic Coatings—Measurement of Coating Thickness—Coulometric Method by Anodic Solution[3]

2178 Non-Magnetic Metallic and Vitreous or Porcelain Enamel Coatings on Magnetic Basis Metals, Measurement of Coating Thickness, Magnetic Method[3]

2360 Non-Conductive Coatings on Non-Magnetic Basis Metals—Measurement of Coating Thickness—Eddy Current Method[3]

2361 Electrodeposited Nickel Coatings on Magnetic and Non-Magnetic Substrates—Measurement of Coating Thickness—Magnetic Method[3]

3497 Metallic Coatings—Measurement of Coating Thickness—X-Ray Spectrometric Methods[3]

3543 Metallic and Non-Metallic Coatings—Measurement of Thickness—Beta Backscatter Method[3]

3. Significance and Use

3.1 Most coating specifications specify the thickness of the coating because coating thickness is often an important factor in the performance of the coating in service.

3.2 The methods included in this guide are suitable for acceptance testing and are to be found in ASTM standards.

3.3 Each method has its own limitations with respect to the kind of coating and its thickness.

[1] This guide is under the jurisdiction of ASTM Committee B-8 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.10 on General Test Methods.

Current edition approved Feb. 23, 1990. Published April 1990. Originally published as B 659 – 79. Last previous edition B 659 – 85.

[2] *Annual Book of ASTM Standards,* Vol 02.05.

[3] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.