
Standard Method of Test for

Mass [Weight] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

AASHTO Designation: T 65M/T 65-23

Technically Revised: 2023

Technical Subcommittee: 4f, Metals

ASTM Designation: A90/A90M-21



American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This test method covers procedures for determining the mass [weight] of coating on iron or steel sheet, wire, and other articles in which the coating is zinc or a zinc alloy, such as zinc-5 percent aluminum (including zinc-5 percent aluminum-mischmetal and zinc-5 percent aluminum-0.1 percent magnesium) or 55 percent aluminum-zinc. In the body of this test method, reference to zinc coating shall be interpreted to also include zinc-alloy coating except where specifically stated otherwise.
- 1.2. The final results determined by this test method shall be expressed in SI units or inch-pound units, depending on the units used in the material specification to which the results are to be compared. Certain portions of the procedure involving determination of specimen mass [weight] traditionally have been performed in SI units, and corresponding inch-pound units are not included.
- 1.3. For sheet products, the final results are expressed as either coating mass [weight] total both sides, or coating mass [weight] separately on each side, depending on the specified requirements.
- 1.4. *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. For specific hazards statements, see Section 5.1.*
- 1.5. Current regulation codes and hazard classifications for chemicals used in this test method are listed in 29 CFR 1910.1200.
- 1.6. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.*

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standard:*

- < R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

2.2. *ASTM Standards:*

- < A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- < A792/A792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
- < A875/A875M, Standard Specification for Steel Sheet, Zinc-5% Aluminum Alloy-Coated by the Hot-Dip Process
- < A1046/A1046M, Standard Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process
- < A1057/A1057M, Standard Specification for Steel, Structural Tubing, Cold Formed, Welded, Carbon, Zinc-Coated (Galvanized) by the Hot-Dip Process
- < A1063/A1063M, Standard Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process
- < A1079, Standard Specification for Steel Sheet, Complex Phase (CP), Dual Phase (DP) and Transformation Induced Plasticity (TRIP), Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- < D1193, Standard Specification for Reagent Water
- < E29, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.3. *Federal Standard:*

- < Fed. Std. No. 29, CFR 1910.1200 OSHA Hazard Communication Standard; see also Permissible Exposure Limits—Annotated Tables, available at <https://www.osha.gov/dsg/annotated-pels/>

3. SIGNIFICANCE AND USE

- 3.1. This test method provides a standard method for determining the mass [weight] of coating for comparison with specification requirements. A coating of zinc on iron or steel articles provides protection against corrosion. As the protection is provided by sacrificial loss of zinc, the degree of protection is proportional to the mass [weight] of zinc coating. Specifications for zinc-coated articles frequently provide for different classes of coating so that purchasers can select the coating mass [weight] most suitable to their needs.
- 3.2. This test method determines the average coating mass [weight] over a specified area, from which the average thickness can be calculated. Other test methods not described herein can determine the thickness directly at point locations on the coating; in such cases, the required test method is described in that material specification or by reference to another appropriate test method standard.

4. REAGENTS

- 4.1. *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.¹ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.