



Designation: A 90/A 90M – 95a (Reapproved 1999)

Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings¹

This standard is issued under the fixed designation A 90/A 90M; 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 test method covers procedures for determining the weight [mass] 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 % aluminum (including zinc-5 % aluminum-mischmetal and zinc-5 % aluminum-0.1 % magnesium) or 55 % 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 inch-pound units or SI 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 weight [mass] have traditionally been performed in SI units, and corresponding inch-pound units are not included.

1.3 In this test method, the quantity of material is described in terms of weight [mass]. Weight is the force describing the gravitational attraction of the earth on a quantity of material. In general usage on the surface of the earth, mass of an unknown quantity is determined by comparing with a known quantity (either directly or indirectly and ignoring the buoyancy of the air) as indicated by the attraction of the earth's gravity, thus weight is actually determined. See Appendix X1 of Terminology E 12 for further discussion of weight and mass.

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 5.1.

2. Referenced Documents

2.1 ASTM Standards:

A 653/A 653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process²

¹ This test method is under the jurisdiction of ASTM Committee A05 on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.07 on Methods of Testing.

Current edition approved Oct. 10, 1995. Published December 1995. Originally published as A 90 – 23 T. Last previous edition A 90 – 95.

² *Annual Book of ASTM Standards*, Vol 01.06.

A 792/A 792M Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process²

A 875/A 875M Specification for Steel Sheet, Zinc-5 % Aluminum Alloy-Coated by the Hot-Dip Process²

D 1193 Specification for Reagent Water³

E 12 Terminology Relating to Density and Specific Gravity of Solids, Liquids, and Gases⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁶

3. Significance and Use

3.1 This test method provides a standard method for determining the weight [mass] 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 weight [mass] of zinc coating. Specifications for zinc-coated articles frequently provide for different classes of coating so that the purchaser can select the coating weight [mass] most suitable to his needs.

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.⁷ 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.

4.2 *Purity of Water*—Water used to prepare chemical solutions shall be reagent water as defined by Type IV of Specification D 1193.

³ *Annual Book of ASTM Standards*, Vols 10.01 and 11.01.

⁴ *Annual Book of ASTM Standards*, Vol 15.05.

⁵ *Annual Book of ASTM Standards*, Vols 10.02 and 14.02.

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

⁷ "Reagent Chemicals, American Chemical Society Specifications," Am. Chemical Soc., Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Analytical Standards for Laboratory U.K. Chemicals," BDH Ltd., Poole, Dorset, and the "United States Pharmacopeia."