



Designation: G33 – 99 (Reapproved 2020)

Standard Practice for Recording Data from Atmospheric Corrosion Tests of Metallic-Coated Steel Specimens¹

This standard is issued under the fixed designation G33; 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 practice covers a procedure for recording data of atmospheric corrosion tests of metallic-coated steel specimens. Its objective is the assurance of (1) complete identification of materials before testing, (2) objective reporting of material appearance during visual inspections, and (3) adequate photographic, micrographic, and chemical laboratory examinations at specific stages of deterioration, and at the end of the tests.

1.2 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- A90/A90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
- A428/A428M Test Method for Weight [Mass] of Coating on Aluminum-Coated Iron or Steel Articles
- E376 Practice for Measuring Coating Thickness by Magnetic-Field or Eddy Current (Electromagnetic) Testing Methods
- G46 Guide for Examination and Evaluation of Pitting Corrosion

¹ This practice is under the jurisdiction of ASTM Committee G01 on Corrosion of Metals and is the direct responsibility of Subcommittee G01.04 on Corrosion of Metals in Natural Atmospheric and Aqueous Environments.

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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. Significance and Use

3.1 Use of this practice will maximize the benefits to be gained from atmospheric testing of metallic-coated steel. It will also aid in comparing results from one location to another where similar tests have been conducted.

4. Data to be Recorded Before Testing

4.1 Material Characteristics:

4.1.1 Coating and Basis Metal:

4.1.1.1 Type of coating (zinc, aluminum, nickel-chromium, and so forth).

4.1.1.2 Method of application (hot-dip, electroplated, electroless, mechanical plated, and so forth),

(1) Area coated (if not 100 % of surface),

(2) Pre-treatment (basis metal: flux, sand-blast, and so forth), and

(3) Post-treatment (heating, sealing, and so forth),

4.1.1.3 Coating composition,

4.1.1.4 Basis metal product.

(1) Basis metal composition, and

(2) Metallurgical history prior to coating (if any).

4.1.1.5 Chemical treatment of coating.

4.1.1.6 Black and white photograph of typical surface area illustrating texture (1:1 magnification ratio).

4.1.1.7 Micrograph of typical coating cross section (magnification and etchant to be specified).

4.1.2 Coating Weight and Thickness:

4.1.2.1 Weight by stripping. (See Test Method A90/A90M or A428/A428M.)

(1) Method.

4.1.2.2 Measured Thickness.

(1) Method (for example, eddy current, back scattering, magnetic),

NOTE 1—If a magnetic type instrument is used, refer to Practice E376.

(2) Number of determinations,

(3) Mean,

(4) Standard deviation, and

(5) Range (spread of determinations).

4.2 Specimen Identification and Exposure Location:

4.2.1 Marking (method to be specified).

4.2.2 Specimen position in test area.

4.2.3 Angle of exposure from horizontal.