Designation: ~~G33 – 99 (Reapproved 2010)~~ G33 – 99 (Reapproved 2015)

Standard Practice for Recording Data from Atmospheric Corrosion Tests of Metallic-Coated Steel Specimens[1]

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

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

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),~~
(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),
~~(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~~
(1) Basis metal composition, and
(2) Metallurgical history prior to coating (if any).

[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 Atmospheric Corrosion.

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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.

~~(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),~~
(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).
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~~(2) Number of determinations,~~
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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.
4.2.4 Direction of specimen faces.
4.2.5 Location of test area.
4.2.6 Description of test area (location of nearby industry, ocean, and so forth, and recorded data on specific contaminants where possible).
4.2.7 Exposure starting date:
4.2.7.1 Weather conditions (for example, bright, cloudy, sunshine, rain, and so forth),

4.3 *Specimen Characteristics:*
4.3.1 Description (sheet, wire, hardware, and so forth).
4.3.2 Specimen size:
4.3.2.1 Specimen surface dimensions.
4.3.2.2 Gage or thickness.
4.3.3 Specimen weight (when applicable).
4.3.4 Edge condition (to be specified).
4.3.5 Specimen preparation (method of cleaning).
4.3.6 Surface appearance (verbal description, color, texture, and so forth) (see 5.3).

5. Data to be Recorded During Field Inspections

5.1 *Specimen Identification:*
5.1.1 Marking.
5.1.2 Position in test area.

5.2 *Exposure Period and Location:*
5.2.1 Location.
5.2.2 Inspection date.
5.2.2.1 Weather conditions (for example, bright, cloudy, sunshine, rain, and so forth).

5.3 *Specimen Appearance (Top and Bottom Sides Should be Rated Separately):*
5.3.1 Color:
5.3.1.1 *Hue*—should be described by the following terms: red, orange, yellow, green, blue, violet, white, brown, gray, and black. Combination colors should be described by combining terms, for example, yellow-brown.
5.3.1.2 *Brilliance*—should be described by light or dark.
5.3.1.3 *Saturation*—should be described by pale or vivid.
5.3.1.4 *Area*—of the specimen affected should be expressed in percent.
5.3.2 Surface Texture:
5.3.2.1 The following terms should be used to describe the surface texture: