Designation: G 33 – 99

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

This standard is issued under the fixed designation G 33; 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 outlines 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:*

A 90/A 90M Test method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings[2]

A 428/A 428M Test method for Weight (Mass) of Coating on Aluminum-Coated Iron or Steeel Articles[2]

E 376 Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods[3]

G 46 Guide for Examination and Evaluation of Pitting Corrosion[4]

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, etc).

4.1.1.2 Method of application (hot-dip, electroplated, electroless, mechanical plated, etc),

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

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

(3) Post-treatment (heating, sealing, etc),

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 A 90/A90M or A 428/A 428M.)

(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 E 376.

(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.

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, etc, and recorded data on specific contaminants where possible).

[1] This practice is under the jurisdiction of ASTM Committee G-1 on Corrosion of Metals and is the direct responsibility of Subcommittee G01.04 on Atmospheric Corrosion.

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

[3] *Annual Book of ASTM Standards*, Vol 03.03.

[4] *Annual Book of ASTM Standards*, Vol 03.02.