Designation: G 92 – 86 (Reapproved 1997)ε1

Standard Practice for Characterization of Atmospheric Test Sites[1]

This standard is issued under the fixed designation G 92; 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.

ε[1] NOTE—Editorial changes were made in December 1997.

1. Scope

1.1 This practice gives suggested procedures for the characterization of atmospheric test sites. Continuous characterization can provide corrosion data, environmental data, or both which will signal changes in corrosivity of the atmospheric environment. This practice can also provide guidance for classification of future test sites.

1.2 Two methods are defined in this practice for the characterization of atmospheric test sites. The methods are identified as characterization Methods A and B. The preferred characterization technique would require using both Method A and B for concurrent data collection.

1.2.1 Method A is to be used when atmospheric corrosion is monitored on a continuing basis at a test site using specified materials and exposure configurations.

1.2.2 Method B is specified when atmospheric factors are monitored on a continuing basis.

1.3 *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 36/A 36M Specification for Carbon Structural Steel[2]

B 6 Specification for Zinc[3]

G 1 Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens[4]

G 50 Practice for Conducting Atmospheric Corrosion Tests on Metals[4]

G 84 Practice for Measurement of Time-of-Wetness on Surfaces Exposed to Wetting Conditions as in Atmospheric Corrosion Testing[4]

G 91 Practice for Monitoring Atmospheric SO_2 Using the Sulfation Plate Technique[4]

3. Summary of Methods

3.1 Characterization Method A is to be used when atmospheric corrosion data are to be obtained.

3.1.1 Corrosion tests to measure the corrosivity of the test site should follow the procedure established by Practice G 50. Additional special instructions are identified in this procedure relating to types of materials for corrosion characterization tests, time of test exposure, positioning of test specimens, removal of test specimens and proper identification, cleaning practices, and reporting of data.

3.2 Characterization Method B is to be used when atmospheric climatological factors influencing the corrosion of metals are to be monitored.

3.2.1 Several atmospheric factors which have been identified as having significant bearing on the corrosion of metals include, but are not limited to, sulfur dioxide, chlorides, temperature, humidity, precipitation, time of wetness, and atmospheric particulate matter.

3.3 The preferred technique utilizes both Methods A and B for concurrent data to be collected.

3.3.1 Should either Method A or B be singled out as the primary technique to be used on a continuing basis, both should be used at some point in time to establish a data base. The availability of computerized weather stations greatly facilitates the collection of reliable atmospheric data.

4. Significance and Use

4.1 This practice gives suggested procedures for characterization of atmospheric test sites. It can be useful to researchers, manufacturers, engineering firms, architects, and construction contractors to provide corrosion and environmental data, materials selection information, and a materials storage practice.

4.2 This practice does not give specific parameters for classifying the type of test site.

PROCEDURES

5. Method A

5.1 *Materials*:

5.1.1 The materials recommended for conducting atmospheric corrosion characterization studies are copper-bearing structural carbon steel (such as Specification A 36/A 36M with

[1] This practice is under the jurisdiction of Committee G-1 on Corrosion of Metals and is the direct responsibility of Subcommittee G01.04 on Atmospheric Corrosion.
Current edition approved Nov. 21, 1986. Published January 1987.

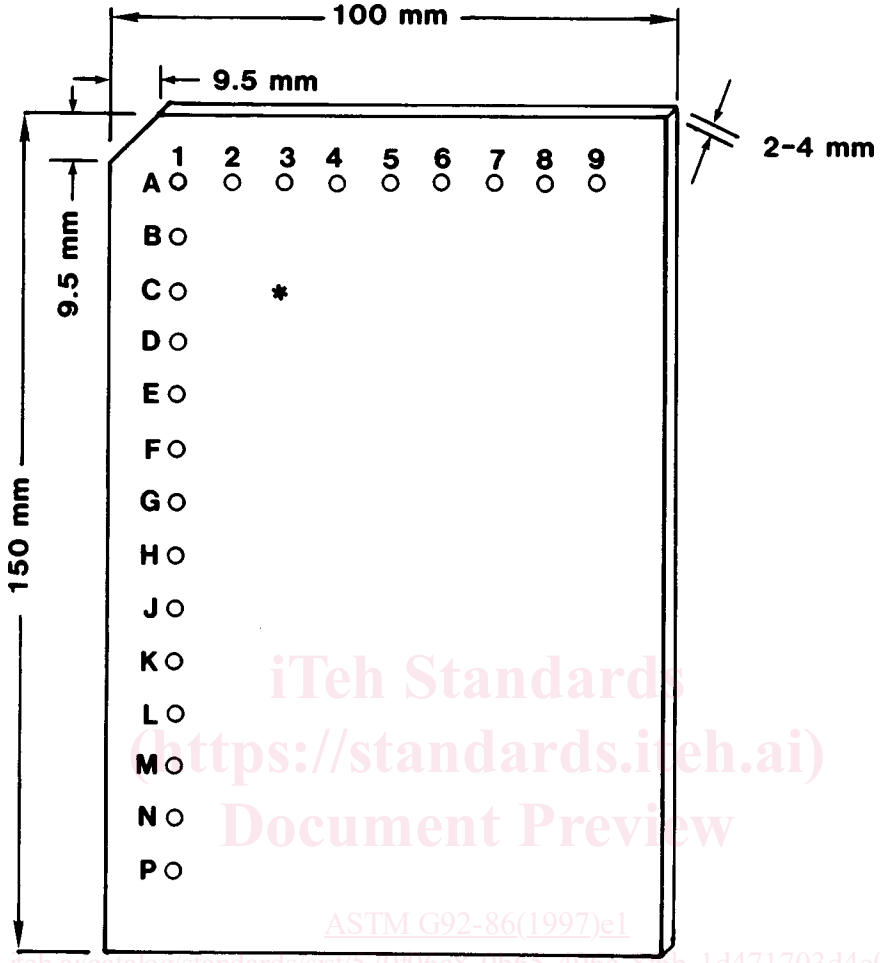
[2] *Annual Book of ASTM Standards*, Vol 01.04.

[3] *Annual Book of ASTM Standards*, Vol 02.04.

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

0.2 % copper min) and high-purity zinc (Specification B 6 high grade).

by the same procedure to ensure a comparative surface finish following the guidance of Practice G 1. The recommended



* Template contains 126 drilled holes

FIG. 1 Sample Atmospheric Specimen Drill Code Identification Template

5.1.2 Materials recommended are the absolute minimum required to serve as a characterization base for test sites. Additional materials should be added to meet individual needs. Sufficient material should be obtained at the start to insure that an ample supply of the same heat is available to complete the characterization test. If tests are on-going and additional materials must be obtained, care should be taken in attempting to match material compositions.

5.1.3 Sufficient specimens should be prepared to comply with the specific criteria for the planned characterization test.

5.2 *Material Preparation*:

5.2.1 Test specimens should be sheared to size, for example, 100 × 150 mm.

5.2.2 An identifying code should be assigned to each specimen. Locating a permanent code on each test specimen can be accomplished easily by using a code template (Fig. 1).

5.2.2.1 Pre-assignment of codes for a definite test period is suggested. After a temporary mark is placed on the specimen, a permanent drilled code (a series of 2.5 mm holes) should perforate the test specimen.

5.2.3 All test specimens of the same alloy should be cleaned practice suggested for cleaning is (*a*) degrease and pickle, if necessary, to remove grease, mill scale, or other impurities; (*b*) scrub with pumice and britle brush until free of water-break; (*c*) dry with towels; and (*d*) place in a desiccator for 2 h before weighing.

5.2.4 Specimens should be weighed (±1.0 mg) and original mass recorded on a data sheet (Table 1). Specific information, such as nominal composition, density, and exposed area should also be recorded.

5.2.5 Specimens should be stored in a desiccator or sealed in airtight storage bags until the time of exposure.

5.3 *Exposure of Test Specimens*:

5.3.1 The frequency at which test specimens should be exposed at a test site is dictated by the specific needs for data.

5.3.2 Triplicate specimens of each material should be exposed for each test period.

5.3.3 An exposure period of one year is suggested as a minimum, multiple periods should be considered, for example, 3, 6, and 12 months; 1 and 2 years or 1, 2, and 4 years. Shorter test periods may be necessary where corrosion is severe and longer test periods where corrosion is less severe.