Designation: B537 – 70 (Reapproved 2013)

Standard Practice for Rating of Electroplated Panels Subjected to Atmospheric Exposure[1]

This standard is issued under the fixed designation B537; 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 preferred method for evaluating the condition of electroplated test panels that have been exposed to corrosive environments for test purposes. It is based on experience in use of the method with standard 10- by 15-cm (4- by 6-in.) panels exposed on standard ASTM racks at outdoor test sites in natural atmospheres. It has been used also for rating similar panels that have been subjected to accelerated tests such as those covered by Practice B117, Method B287, Test Method B368, and Test Method B380. Any modifications needed to adapt the method to rating actual production parts are not considered in this practice.

1.2 This practice refers only to decorative-protective coatings that are cathodic to the substrate, typified by nickel/chromium or copper/nickel/chromium on steel or zinc die castings. It is not intended for use with anodic sacrificial coatings such as zinc and cadmium on steel.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B117 Practice for Operating Salt Spray (Fog) Apparatus

B287 Method of Acetic Acid-Salt Spray (Fog) Testing (Withdrawn 1987)[3]

B368 Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)

B380 Test Method for Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodkote Procedure

2.2 *ASTM Adjunct:*[4]

Dot charts (9 charts, 8½ by 11 in.) (9 color photos, 3 by 5 in.)

3. Basis of Procedure

3.1 The rating method described in this recommended practice is based on the recognition that typical decorative-protective deposits such as nickel/chromium, with or without a copper undercoat, have two functions: (*1*) to protect the substrate from corrosion and thus prevent degradation of appearance caused by basis metal corrosion products (for example, rust and rust stain); and (*2*) to itself maintain a satisfactory appearance. Although these functions overlap, they can be evaluated separately and it is frequently desirable to do so. Accordingly, this practice assigns separate ratings to (*1*) appearance as affected by corrosion of the substrate and (*2*) appearance as affected by deterioration of the coating itself.

3.2 The rating number assigned to the ability of the coating to protect the substrate from corrosion is called the "protection" number or rating.

3.3 The rating number assigned to the inspector's judgment of the overall appearance of the panel, including all defects caused by the exposure (Note 1), is called the "appearance" number or rating.

NOTE 1—Panels that are not "perfect" even before being exposed should normally be rejected (see Note 4).

3.4 The result of inspecting a panel is recorded as two numbers separated by a slash (/), the protection number being given first.

3.5 In addition to recording the numerical rating of a panel, the inspector should note the type(s) and severity of defect(s) contributing to the rating. This may be done by the use of agreed symbols for the most common defects (Appendix X1) and abbreviations for degree or severity of these defects.

[1] This practice is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatingsand is the direct responsibility of Subcommittee B08.05 on Decorative Coatings.

Current edition approved Dec. 1, 2013. Published December 2013. Originally approved in 1970. Last previous edition approved in 2007 as B537 – 70 (2007). DOI: 10.1520/B0537-70R13.

[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] The last approved version of this historical standard is referenced on www.astm.org.

[4] Color reproductions of these photographs are available from ASTM International Headquarters. Order Adjunct No. ADJB0537. Original adjunct produced in 1987.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States