Designation: B680 – 80 (Reapproved2009)

Standard Test Method for Seal Quality of Anodic Coatings on Aluminum by Acid Dissolution[1]

This standard is issued under the fixed designation B680; 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 test method covers a test for the quality of seal of porous anodic coatings on aluminum and its alloys. It is based upon the loss in mass of the coating after immersion in a warm phosphoric-chromic acid solution.

1.2 This test method is applicable to anodic coatings intended for exposure to the weather, or for protective purposes in corrosive media, and where resistance to staining is important.

1.3 This test method is not applicable to:

1.3.1 Hard coatings, which normally are not sealed.

1.3.2 Anodic coatings that have been sealed only in dichromate solutions.

1.3.3 Anodic coatings that have undergone a treatment to render them hydrophobic.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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]

B137 Test Method for Measurement of Coating Mass Per Unit Area on Anodically Coated Aluminum

D1193 Specification for Reagent Water

3. Significance and Use

3.1 This test method describes a destructive test procedure for measuring the degree of seal of the porosity in anodic oxide coatings. Low coating mass loss is an indication of good seal quality and of the ability of the coating to resist staining and "blooming" in many types of service.

3.2 This test method is suitable for quality control purposes within manufacturing operations and for determining whether anodized parts meet seal quality requirements in applicable specifications.

4. Apparatus

4.1 *Laboratory Balance,* accurate to 1 mg.

4.2 *Glass Container,* means of heating and stirring, and a thermometer. There shall be no metal in contact with the test specimen or the solution.

5. Acid Test Solution

5.1 The test solution shall have the following makeup:

Chromic acid anhydride (CrO_3)	20 ± 0.5 g
Orthophosphoric acid of 85 mass %, density 1.69	35 ± 0.5 mL
Distilled or deionized water conforming with Type III Reagent Water of Specification D1193, to make up to	1000 mL

NOTE 1—This solution is commonly referred to as a "stripping solution" for anodic coatings and is of the same composition as that employed in Test Method B137. This solution dissolves the anodic coating with no significant attack of the substrate metal.

5.2 The test solution may be used repeatedly but shall be discarded after 1 g of anodic coating has been dissolved per litre of solution.

NOTE 2—The solution may be used for as many as 20 test specimens per litre provided that the average mass loss does not exceed 50 mg per specimen.

6. Preparation of Test Specimen

6.1 Select an uncontaminated specimen having an area about 1 dm^2 of the anodized surface to be tested.

6.2 The mass of the specimen shall not exceed 200 g.

6.3 When it is desired to conduct the test on one face only of the specimen, the anodic coating on the other surface is

[1] This test method is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatingsand is the direct responsibility of Subcommittee B08.07 on Conversion Coatings.

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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.