



Standard Test Method for Sandwich Corrosion Test¹

This standard is issued under the fixed designation F 1110; 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 defines the procedure for evaluating the corrosivity of aircraft maintenance chemicals, when present between faying surfaces (sandwich) of aluminum alloys commonly used for aircraft structures. This test method is intended to be used in the qualification and approval of compounds employed in aircraft maintenance operations.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information.

1.3 *This standard may involve hazardous materials, operations, and equipment. 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.* Specific hazard statements appear in Section 9.

2. Referenced Documents

2.1 ASTM Standards:

D 1193 Specification for Reagent Water²

D 1748 Test Method for Rust Protection by Metal Preservatives in the Humidity Cabinet³

G 46 Guide for Examination and Evaluation of Pitting Corrosion⁴

2.2 Industry Standards:⁵

SAE-AMS-QQ-A-250/4 Al Alloy 2024, Plate and Sheet

SAE-AMS-QQ-A-250/5 Al Alloy Alclad 2024, Plate and Sheet

SAE-AMS-QQ-A-250/12 Al Alloy 7075, Plate and Sheet

SAE-AMS-QQ-A-250/13 Al Alloy Alclad 7075, Plate and Sheet

2.3 Military Specification:

MIL-A-8625 Anodic Coatings for Aluminum and Al Alloys⁶

3. Terminology

3.1 Definition of Term Specific to This Standard:

3.1.1 *sandwich corrosion test*—a comparative accelerated environmental test of the corrosivity of liquid or solid materials present between faying surfaces of structural aluminum alloys commonly used in aerospace construction.

4. Summary of Test Method

4.1 Aluminum coupons having clad or anodized nonclad surfaces are sandwiched together with a filter paper saturated with the test material between the coupons. The sandwiched coupons are cycled between warm ambient air and warm humid air for 7 days. The coupons are then inspected to determine whether corrosion more severe than that caused by reagent water has occurred on the surfaces exposed to the test material. This test method is used for solutions of dry granular material or for liquid materials.

5. Significance and Use

5.1 The data generated by this test method shall be used to determine whether aircraft structural aluminum alloys are liable to be corroded or damaged by application of the test material during routine maintenance operations.

5.2 Interpretation of the sandwich corrosion test results is based on a comparison of the appearance of faying surfaces of three sets of coupons. One set of test coupons is exposed with reagent water only in the faying surfaces, to establish the baseline (controls) against which the panels exposed to the test material are compared. Disregard corrosion at cut edges of the test coupons.

5.3 The relative corrosion severity rating system is provided in order to allow a numerical classification of the test results and to eliminate the necessity for elaborate weight loss measurements. Pitting corrosion, which is rated 4—extensive (severe) corrosion, may involve only a negligible weight loss.

¹ This test method is under the jurisdiction of ASTM Committee F07 on Aerospace and Aircraft and is the direct responsibility of Subcommittee F07.07 on Qualification Testing of Aircraft Cleaning Materials.

Current edition approved Aug. 10, 2002. Published September 2002. Originally published as F 1110 – 86. Last previous edition F 1110 – 90(1998).

² *Annual Book of ASTM Standards*, Vol 11.01.

³ *Annual Book of ASTM Standards*, Vol 05.01.

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

⁵ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁶ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, Attn: NPODS.