



Designation: F3440 – 21

Standard Test Method for Corrosion of Low-Embrittling Zinc-Nickel Plate by Aircraft Maintenance Chemicals¹

This standard is issued under the fixed designation F3440; 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 is intended as a means of determining the corrosive effects of aircraft maintenance chemicals on low-embrittling zinc-nickel plating used on aircraft high-strength steel, under conditions of total immersion by quantitative measurements of weight change. Aircraft maintenance chemicals requiring this test method shall be determined by the cognizant engineering authority.

1.2 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see Section 6 and 4.1.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D329 Specification for Acetone

D1193 Specification for Reagent Water

2.2 *SAE Standards:*³

SAE-AMS-6345 Steel Sheet, Strip and Plate (SAE 4130)
Normalized or Otherwise Heat Treated

SAE-AMS-6350 Steel Sheet, Strip and Plate (SAE 4130)

SAE-AMS 2417 Plating, Zinc-Nickel Alloy

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.

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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.

³ Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096, <http://www.sae.org>.

SAE-AMS 2750 Pyrometry

3. Significance and Use

3.1 The data generated by this test method shall be used to determine whether low embrittling zinc-nickel plated parts are liable to be corroded or damaged by application of the test material during routine maintenance operations.

4. Apparatus

4.1 *Wide Mouth Sealable Glass Jar or Stoppered Flask*, having a capacity so chosen that specimens will remain fully immersed in a vertical position and not in contact with other specimens during the test and the ratio of area of immersed metal to the volume of solution will be as prescribed in 9.1. (**Warning**—Some aircraft maintenance chemicals when heated have high vapor pressures or may produce gases during testing. Suitable precautions should be taken to prevent the containing vessel from exploding or the vessel should be so chosen as to withstand the resulting pressures.)

4.2 *Constant Temperature Device*—Any suitable regulated heating device may be employed for maintaining the solution at the required temperature.

4.3 *Oven*, capable of maintaining temperature in accordance with SAE-AMS 2750, Furnace Class 1.

5. Reagents

5.1 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type III of Specification D1193.

5.2 *Acetone*, in accordance with Specification D329.

6. Safety Precautions

6.1 The solvents used in cleaning test specimens are flammable or harmful if inhaled, or both. Keep away from sparks and open flames. Avoid breathing vapors and prolonged or repeated contact with skin. Use adequate ventilation.

6.2 Some materials used for aircraft maintenance may contain flammable solvents, acids or alkalis, or other toxic compounds. Take suitable precautions to prevent personal injury.