



Designation: F 502 – 93 (Reapproved 1998)^{ε1}

Standard Test Method for Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces¹

This standard is issued under the fixed designation F 502; 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.

This test method has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

^{ε1} NOTE—Incorrect Fig. 1 was editorially changed to the correct figure.

1. Scope

1.1 This test method covers determination of the effects of cleaning solutions and liquid cleaner concentrates on painted aircraft surfaces (Note 1). Streaking, discoloration, and blistering may be determined visually. Softening is determined with a series of specially prepared pencils wherein determination of the softest pencil to rupture the paint film is made.

NOTE J—This test method is applicable to any paint film that is exposed to cleaning materials. MIL-C-81773(AS) has been selected as a basic example. When other paint finishes are used, refer to the applicable material specification for panel preparation and system curing prior to testing.

1.2 *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 Standard:

D 1193 Specification for Reagent Water²

2.2 Military Standards:³

MIL-C-81773 (AS) Coating, Polyurethane, Aliphatic, Weather Resistant

MIL-A-9962 Abrasive Mats, Non-Woven Non-Metallic

MIL-P-23377 Primer Coating, Epoxy, Polyamide, Chemical and Solvent Resistant

MIL-C-81706 Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys

2.3 Federal Standards:³

595 Color (Requirements for Individual Color Chips)

QQ-A-250/13 Aluminum-Alloy Alclad 7075, Plate and Sheet

¹ This test method is under the jurisdiction of ASTM Committee F-7 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 *Annual Book of ASTM Standards*, Vol 11.01.

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3. Materials

3.1 *Drawing Pencils* (Note 2)—6B, 5B, 4B, 3B, 2B, B, HB, F, H, 2H, 4H, 5H, and 6H.

3.2 *Fine Sand Paper*, 180 to 320 grit.

3.3 *Abrasive Mats*, MIL-A-9962, aluminum oxide, fine or very fine.

3.4 *Acetone*.

3.5 *MIL-C-81773(AS) Coating*, polyurethane, aliphatic, weather-resistant, Fed. Std. No. 595 Color No. 17875, insignia white.

3.6 *MIL-P-23377 Primer Coating*, epoxy polyamide, chemical- and solvent-resistant.

3.7 *Chemical Conversion Materials*, MIL-C-81706, Class 1A, for coating aluminum and aluminum alloys.

3.8 *Distilled or Deionized Water* conforming to Specification D 1193, Type IV.

NOTE 2—All pencils in a set must be from one manufacturer (for example, Venus, Eagle, etc.).

4. Test Specimens

4.1 QQ-A-250/13 Aluminum Alloy Plate and Sheet, Alclad 7075-T6.

5. Test Solutions

5.1 Concentrated (as received, if a liquid).

5.2 In use dilution, if diluent is water, see 3.8.

6. Safety Precautions

6.1 All safety regulations prescribed for spray application of polyurethane paints shall be strictly adhered to in the use of this test method.

6.2 The testing procedure shall be conducted in a well-ventilated area.

7. Procedure

7.1 *Preparation of Pencils*—Prepare a set of drawing pencils for testing the painted panels by stripping the wood away from the end approximately $\frac{3}{8}$ in. without damaging the lead (as shown in Fig. 1). Then square the tip of the lead by holding the pencil in a vertical position and moving the lead back and forth over a very fine (180 to 320 grit) sandpaper. Square the tip of the lead after each trial.

7.2 *Preparation of Panels*—Wipe 3 by 6 by 0.02-in. (76 by 152 by 0.5-mm) aluminum panels with acetone, dry and