



Designation: F502 – 08 (Reapproved 2013)

# Standard Test Method for Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces<sup>1</sup>

This standard is issued under the fixed designation F502; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 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 1**—This test method is applicable to any paint film that is exposed to cleaning materials. MIL-PRF-85285 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 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *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:*<sup>2</sup>

**D329** Specification for Acetone

**D1193** Specification for Reagent Water

2.2 *Military Standards:*<sup>3</sup>

**MIL-PRF-85285** Coating: Polyurethane, Aircraft and Support Equipment

**A-A-58054** Abrasive Mats, Non-Woven Non-Metallic

**MIL-PRF-23377** Primer Coatings: Epoxy, High Solids  
**MIL-DTL-81706** Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys

2.3 *Federal Standards:*<sup>3</sup>

**FED-STD-595** Colors Used in Government Procurement

2.4 *Industry Standards:*<sup>4</sup>

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

## 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*, A-A-58054, aluminum oxide, fine or very fine.

3.4 *Acetone*, in accordance with Specification **D329**.

3.5 *MIL-PRF-85285 Coating*, polyurethane, Aircraft and Support Equipment, FED-STD-595 Color No. 17875, insignia white.

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

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

3.8 *Distilled or Deionized Water*, in accordance with Specification **D1193**, Type IV.

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

## 4. Safety Precautions

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

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

<sup>1</sup> 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 Dec. 1, 2013. Published December 2013. Originally approved in 1977. Last previous edition approved in 2008 as F502 – 08. DOI: 10.1520/F0502-08R13.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from Department of Defense Single Stock Point (DODSSP) Web Server at <http://dodssp.daps.dla.mil> using ASSIST Quick Search.

<sup>4</sup> Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.