



Designation: F 548 – 81 (Reapproved 1994)<sup>ε1</sup>

## Standard Test Method for Intensity of Scratches on Aerospace Transparent Plastics<sup>1</sup>

This standard is issued under the fixed designation F 548; 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.

<sup>ε1</sup> NOTE—Section 9 was added editorially in June 1994.

### 1. Scope

1.1 This test method covers the visual inspection of shallow or superficial scratches on the surface of aerospace transparent plastic materials.

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. Summary of Test Method

2.1 A visual comparison is made between a set of graded scratch standards and the scratch on the plastic material to determine the relative intensity of the scratch.

### 3. Significance and Use

3.1 Scratches exist on all transparent plastic surfaces. Usually they are very fine scratches from cleaning operations that are not visible when looking through the plastic. Deeper scratches may result from careless cleaning or handling. While these may not be deep enough to affect the structural integrity of the part, their appearance in certain locations may be distracting to the observer looking through the plastic. Therefore, a procedure to define these scratches is useful.<sup>2</sup>

### 4. Reference Materials

4.1 Visual comparison standards are available from ASTM, 100 Barr Harbor Drive, West Conshohocken, Philadelphia, PA 19428.<sup>2</sup>

4.1.1 Adjunct ADJF0548 consists of a glass covered plastic

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<sup>2</sup> Plastic scratch visual comparison standards are available at a nominal charge from ASTM Headquarters, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, Philadelphia, PA 19428-2959. Order Adjunct ADJF0548.

plate with eight scratches of graded intensity on the inside plastic surface. The lightest scratch is identified as F 548-11 and the heaviest as F 548-18.

### 5. Procedure

5.1 Place the part in a suitable inspection position. This may be horizontal on a padded table, vertical against a neutral background, or at an angle. The scratched surface shall be toward the observer. The light level shall be a minimum of 80 lm. Either natural or artificial light may be used. Place the scratch in the visual comparison standard beside and parallel to the scratch on the plastic material. Rotate the part or viewing angle to get the best definition of the scratch. Disregarding the length of the scratch on the plastic material and on the standard, select and record the highest standard scratch that most clearly matches the appearance of the scratch on the plastic material. Measure and record the length of the scratch to the nearest 1 mm (0.04 in.).

### 6. Interpretation

6.1 Customer specifications for transparent plastic materials and parts may detail allowable frequency, location, length, and standard number for scratches and they may assign maximum scratch limits for critical and noncritical optical viewing areas.

### 7. Report

7.1 For each scratch within the scope of the plastic scratch standard, report its standard number, length, frequency, and location.

### 8. Precision and Bias

8.1 Precision and bias are not applicable as this is a subjective comparison against a visual standard for which specific levels of precision cannot be set.

### 9. Keywords

9.1 comparison standard; scratches; transparent plastic