

PAINT ADHESION TEST

Application

This method is used to measure the relative adhesion of paint to steel, aluminum, galvanized steel, plastic, or other substrates.

Apparatus Required

Knife

A pocket knife of good quality is required for Method "A" and "C" of this procedure as outlined for scratch test. It must have a 65 - 75 mm long blade and be 10 mm wide.

Scriber

A carbide-tipped scriber must be used in Method "B" and "D" of this procedure for the scriber test.

Source:

Aircraft Specialties, Inc. (#90C)
P.O. Box 98
Lapeer, MI 48446 U.S.A.
(303) 664-2981

G.T.S. Co. (General Scriber #CM88)
12015 Telegraph Rd.
Redford, MI 48239 U.S.A.
(313) 531-7666

James Neill Tools (Eclipse Model 225)
James Neill Sheffield Ltd.
Sheffield S11 8 HB U.K.

Materials Required

Panels

See FLTM BI 103-02 for panel preparation.

Adhesion Tape

No. 898 (Minnesota, Mining and Manufacturing Co. - 3M) 25 mm wide. Use only No. 898 tape that is made in the U.S.A. Other No. 898 tapes have different adhesion characteristics. Store in the original package in a dry, dark location.

Date	Action	Revisions
2001 03 14	Revised	Editorial – no technical change A. Cockman
1992 01 28		

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Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

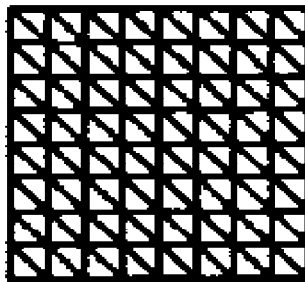
1. When the paint adhesion test is required after another test procedure, the adhesion test must be performed within 30 minutes of the previous test or as otherwise specified by the applicable Engineering Material Specification.
2. Measure and record film thickness, prior to adhesion test in accordance with FLTM BI 117-01.
3. Remove all loose debris (brush off) from the scribe line prior to tape test.

Method "A" - Scratch Test

1. On an unmarked section of the test panel, draw the knife blade across the panel for a distance of 50 mm with sufficient pressure to remove a narrow ribbon of paint down to the base metal. The flat part of the blade should be inclined away from the operator at an angle of approximately 30° to the panel and drawn towards him/her to remove the ribbon of paint.
2. Examine and report any flaking or chipping or paint away from the scratch marks.

Method "B" - Scribe Test

1. Scribe lines through the paint to the base material as shown:



The scribed lines shall be 3 mm apart, at right angles and diagonally in one direction.

2. 3M No. 898 tape shall be applied by pressing firmly and removing within 90 +/- 30 s of application by pulling it off rapidly (not jerked) back upon itself at as close to an angle of 180° to the panel as possible.
3. Observe and report occurrence of chipping, flaking or general poor adhesion as noted after removal of tape. (Refer to Figures 1, 2 and 3 for classification system).

Method "C" - Parallel Scratch Test

1. Draw the knife blade across the test panel at an angle of 90° to the specimen for a length of 50 mm or as long as possible with sufficient pressure to cut through the paint down to the base material. The knife blade should be drawn towards the operator. Draw a second parallel line in the same way 2 mm apart from the first.
2. Apply tape over the drawn lines in a parallel direction using firm finger pressure to ensure contact with the panel surface (i.e., drawn lines to be visible).
3. Remove the tape within 90 +/- 30 s of application by pulling back rapidly (not jerked) back upon itself at as close to an angle of 180° to the panel as possible.
4. Report occurrence of chipping, flaking, or general poor adhesion as noted after removal of tape. Plastic and glass-fiber substrates may also fracture. In the absence of loss of paint adhesion such chipping shall be ignored.

Method "D" - Scribe Test for Two-Component Urethane Coatings

Note: This method will prevent the bridging of the tape between the scribe lines that occur when the small grid is used.

1. Scribe the paint film to be tested as illustrated below. The grid should be approximately 25 mm wide.
2. Place the tape over the grid parallel with the long points of the diamonds as indicated by the arrow.
3. Conduct the test as in Steps 2 and 3 of Method B.