



COATING ADHESION TEST

Application

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

Apparatus Required

Knife

A knife, razor blade, or scalpel of good quality is required for Methods A & C - E of this procedure. It must have at least a 65 - 75 mm long blade and be at least 10 mm wide.

Scriber

A carbide-tipped scribe must be used in Method "B" of this procedure, unless otherwise specified in the specification.

Source:

General Tools & Instruments LLC (CM88 Tungsten Scriber)
(<http://www.generaltools.com/tungsten-carbide-point-scriber-etching-pen-with-magnet>)

Materials Required

Panels

See FLTM BI 103-02 for panel preparation or equivalent.

Adhesion Tape

No. 898 (Minnesota, Mining and Manufacturing Co. - 3M) 25 mm wide.

-or-

An equivalent 25 mm wide tape can be used if agreed upon by Materials Engineering as long as the Peel Strength is greater than 0.6 N/mm per ASTM D 3330, Method A.

Store in the original package in a dry, dark location, and the shelf life is 12 months.

Date	Action	Revisions	Rev 01
2017 05 31	Revised	See Summary of Revisions	J. Crist, NA
1992 01 28	Released		



Procedure

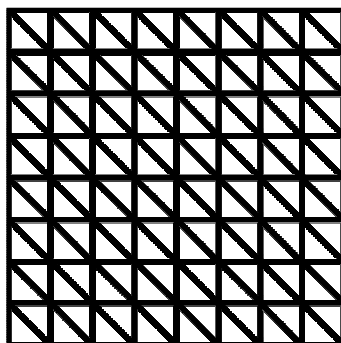
1. When the coating adhesion test is required after another test procedure, the adhesion test must be performed within 30 minutes of the previous test or as otherwise specified by the applicable Engineering Material Specification.
2. Remove all loose debris (brush off) from the scribe line prior to tape 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 coating 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 coating.
2. Examine and report any flaking or chipping or coating away from the scratch marks.

Method "B" - Scribe Test

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



The scribed lines shall be 3 mm apart at right angles and 2.1 mm diagonally in one direction. Diagonal cut must intersect through one corner of the box to the other corner of the 3mm box section as shown above.

If the part is too small for the above pattern the pattern can be modified with Ford Materials Engineering approval.

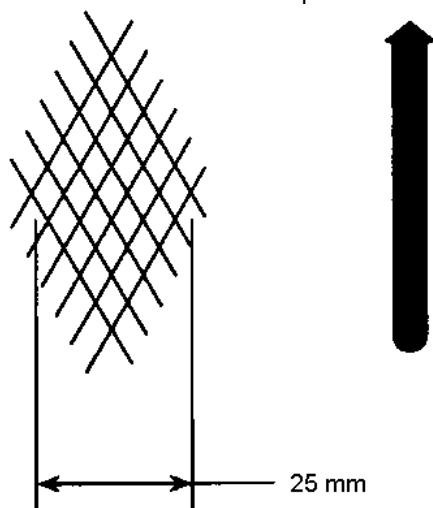
2. The tape shall be applied by pressing firmly and removing within 90 +/- 30 s of application by pulling it off rapidly (not jerked) back upon itself at as close to an angle of 180° to the panel as possible.
3. Observe and report occurrence of chipping, flaking or general poor adhesion as noted after removal of tape. (Refer to Adhesion Classification Test Table).

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 coating 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 coating adhesion such chipping shall be ignored.

Method "D" - Adhesion Test for Flexible Coatings

1. Draw the knife blade on the coating to be tested as illustrated below. The grid should be approximately 25 mm wide with sufficient pressure to cut through the coating down to substrate.
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.



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