

CONICAL MANDREL TEST FOR PAINTED PANELS

Application

This procedure is used to measure the elongation of paint coatings.

Apparatus and Materials Required

Conical Mandrel

This instrument consists of a conical steel mandrel 200 mm long which varies in diameter from 3 mm at the smaller end to 38 mm at the larger end. The mandrel is supported at both ends. The completed assembly consists of a device for holding the paint panel and a draw bar for bending the panel over the mandrel.

Source: Gardner Laboratory, Inc.
Bethesda, Maryland U.S.A.

Steel Panels

Panels used for this test should have their edges slightly rounded to remove burrs, which may give rise to not representative effects associated with cracking of a sharp metallic edge when bent over the small end of the mandrel.

Equipment and procedures for preparation of the panels are described in Ford Laboratory Test Method BI 103-02.

Kraft Wrapping Paper

No. 1 brown, substance 30 (13.6 kg ream weight), as large as the test panels.

Talc

Used for lubricating Kraft paper.

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.

Date	Action	Revisions
2001 03 14	Revised	Editorial – no technical change A. Cockman
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Procedure

1. Prepare panels as described in FLTM BI 103-02.
2. After aging, condition panels for 16 hours at 23 +/- 2 °C and 50 +/- 5 % relative humidity.

Note: A conditioning cabinet maintained at the specified temperature and humidity is required when the room conditions cannot be controlled within the indicated limits.
3. Hold the lever in a horizontal position and place the test specimen between the mandrel and the draw bar with the finish side toward the draw bar.
4. Clamp in a vertical position adjacent to the mandrel by placing the long edge behind the clamping bar in such a manner that the panel is always set up to the narrow end of the mandrel.
5. Place two sheets of Kraft paper, thoroughly lubricated on each side with talc, between the specimen and the draw bar and hold in position only by the pressure of the draw bar against the paper.
6. Move the lever at a uniform velocity to bend the specimen 180° in about 15 seconds. Take care at the end of the stroke so as to not unnecessarily deform the specimen.
7. Examine the specimen visually for cracks and report as required by the relevant Engineering Materials Specification. Any break in the paint film shall be reported in millimeters or fraction thereof from the small end of the mandrel.

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.