



# Standard Test Method for Measuring Thickness of Resilient Floor Covering With Foam Layer<sup>1</sup>

This standard is issued under the fixed designation F 387; 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 Department of Defense.*

## 1. Scope

1.1 The overall thickness or caliper of resilient flooring is a basic physical property. However, conventional means of measuring the thickness, such as a hand micrometer or regular dial micrometer, are not applicable for foam-layer products due to the error from compressing the foam. This test method minimizes this type of measuring error and still retains the convenience and speed of measurement as opposed to a micrometer caliper or other similar device.

1.2 *This standard does not purport to address all of the safety problems, 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. Significance and Use

2.1 This test method is designed to measure the vertical distance between the backing surface and an unembossed or flat area on the wear surface. This distance or thickness is an essential parameter for product classification.

## 3. Apparatus

3.1 The apparatus shall consist of a comparator stand having a flat anvil base at least 6 in. (15 cm) square, equipped with a dial micrometer graduated to 0.001 in. (0.02 mm) and a flat presser foot  $0.250 \pm 0.01$  in. ( $6.35 \pm 0.5$  mm) in diameter. The foot shall exert a total force of  $1 \pm 0.1$  ozf ( $0.28 \pm 0.03$  N) at all points within the measuring range. The force shall be obtained by means of a weight. The contact surfaces of the anvil and presser foot shall be parallel within 0.0001 in. (0.003 mm).

## 4. Test Specimen

4.1 The specimen shall be approximately 2 by 4 in. (50 by 100 mm).

## 5. Calibration

5.1 The calibration of the gage shall be verified by means of gage blocks or shim stock of known thickness appropriate to the thickness being measured.

## 6. Conditioning

6.1 Condition the specimens at least 24 h at  $73.4 \pm 3.6^\circ\text{F}$  ( $23 \pm 2^\circ\text{C}$ ) and  $50 \pm 5\%$  relative humidity. Test at the same conditions.

## 7. Procedure

7.1 Make sure that the instrument is level.

7.2 Check that the presser foot and anvil of the instrument are clean.

7.3 Zero the instrument by allowing the presser foot to rest on the anvil.

7.4 After selecting an unembossed flat area that is substantially larger, if possible, than the presser foot and at least  $\frac{3}{4}$  in. (19 mm) from any edge of the specimen, raise the presser foot and insert the test specimen.

7.5 While holding the specimen flat, taking precaution not to compress it in the vicinity of the foot, lower the foot to rest on the specimen without impact.

7.6 Make five measurements per specimen distributed evenly across the length of the specimen. Record the measurements to the nearest 0.001 in. (0.02 mm).

## 8. Report

8.1 Report the average of the measurements, calculated to the nearest 0.001 in. (0.02 mm). If required by the specification, report the minimum and maximum measurements.

## 9. Precision and Bias

9.1 Based on a limited study, the repeatability standard deviation for five tests on a specimen by one operator with one instrument is  $S = 1.24$  mils (0.038 mm). The repeatability standard deviation between laboratories is  $S = 1.74$  mils (0.044 mm). These results apply to thicknesses between 0.040 in. (1.0 mm) and 0.090 in. (2.3 mm). The bias of the test method has not been determined.

## 10. Keywords

10.1 foam layer; measuring; resilient; thickness

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee F-6 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.20 on Specialty Resilient Flooring for Human Fatigue and Injury Reduction.

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