



Standard Test Method for Apparent Density of Leather¹

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1. Scope

1.1 This test method covers the determination of the apparent density of specimens of leather. This test method does not apply to wet blues.

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. Referenced Documents

2.1 *ASTM Standards:*

D 1813 Test Method for Measuring Thickness of Leather Test Specimens²

D 2347 Test Method for Measuring Area of Leather Test Specimens²

3. Terminology

3.1 *Definition:*

3.1.1 *apparent density*—the weight of a unit volume of bulk leather conditioned for 48 h in an atmosphere maintained at $73.4 \pm 1.8^\circ\text{F}$ ($23 \pm 1^\circ\text{C}$) and $50 \pm 4\%$ relative humidity.

4. Significance and Use

4.1 This test method is designed to determine the apparent density of specimens from their area and thickness. By measuring apparent density, the degree of loading or of compression of leather can be evaluated. The test method is unsuitable for very soft leathers such as chamois whose thickness cannot be accurately measured by the test method cited.

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.03 on Footwear. This test method was developed in cooperation with the American Leather Chemists Assn. (Standard Method E 62 – 1972).

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² *Annual Book of ASTM Standards*, Vol 15.04.

5. Apparatus

5.1 *Round Die*, 2.7 to 3.0 in. (68.6 to 76.2 mm) in diameter.

5.2 *Mallet or Clicking Machine*.

5.3 *Rule or Steel Tape*, graduated in $\frac{1}{32}$ in. or 0.02 in. or in millimetres.

5.4 *Balance* and set of weights.

5.5 *Thickness Gage* as described in Test Method D 1813.

6. Test Specimen

6.1 The test specimen shall be a disk of leather that has been conditioned as specified in 3.1.1. This specimen may be the same as that used in Test Method D 2347.

7. Procedure

7.1 Weigh the specimen to the nearest 0.001 g.

7.2 Measure the thickness to the nearest 0.025-cm in four quadrants of the specimen disk, equidistant from the rim and center (10 mil = 0.025 cm).

7.3 Measure the area to the nearest second decimal place in accordance with Test Method D 2347.

8. Calculation and Report

8.1 Calculate the apparent density to the second decimal place by dividing the weight of the specimen in grams by the product of area in square centimetres and the average thickness in centimetres.

9. Precision and Bias

9.1 Results by the same operator on duplicate, adjacent specimens from the same skin should not be considered suspect unless the coefficient of variation exceeds 4 %.

9.2 Results of two laboratories on duplicate specimens, same skin, should not be considered suspect unless the coefficient of variation exceeds 10 %.

10. Keywords

10.1 apparent density; area; leather; thickness

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