



Designation: D 4786 – 00

Standard Test Method for Stitch Tear Strength, Single Hole¹

This standard is issued under the fixed designation D 4786; 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 approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method is intended for determining the stitch-tearing strength of leather with a tear originating from one hole. It is particularly applicable to heavy leather. This test method does not apply to wet blue.

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 Specimen²

D 2209 Test Method for Tensile Strength of Leather²

3. Significance and Use

3.1 This test method is intended to be used to rate leathers as to their stitch tear strengths.

4. Apparatus

4.1 *Thickness Gage*—A dead-mass type of thickness gage, as described in Test Method D 1813.

4.2 *Steel Punch*, beveled on the outside, which will make a $\frac{1}{8}$ in. diameter hole.

4.3 *Metal Yoke*, made to the dimension shown in Fig. 1.

4.4 *Steel Rod*, 0.095 ± 0.005 in. in diameter and at least 1 in. long.

4.5 *Testing Machine*, power-driven, as described in Test Method D 2209.

5. Test Specimen

5.1 The test specimen shall be a rectangular piece of leather 1 in. by 2 in. die cut from the sample unit of leather. The end of the specimen in which the hole is to be punched shall be at least 1 in. away from any uncut edge on the unit. The direction of the long axis relative to the backbone shall be noted.

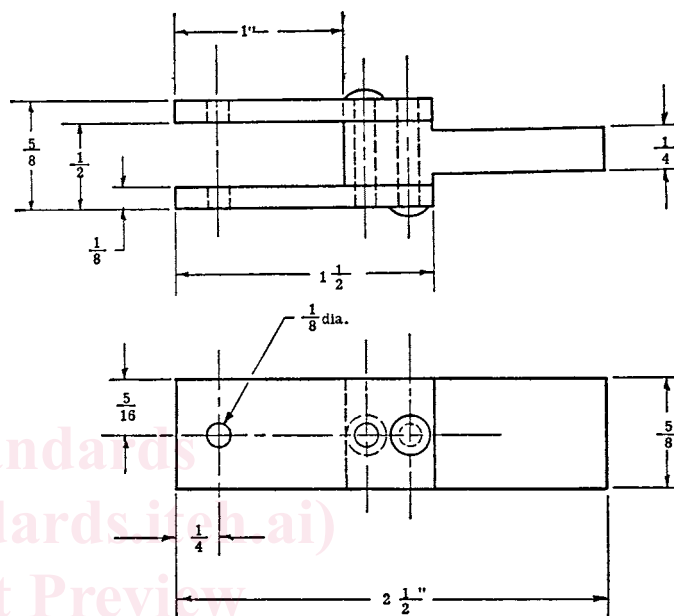


FIG. 1 Metal Yoke

6. Procedure

6.1 Place the specimen on the anvil of the thickness gage and lower the presser foot gently (do not drop) until it rests on the specimen. Take the reading 5 s after the full load is reached. Read the thickness to the nearest 0.001 in. The thickness of the specimen should be taken on the long axis near the end in which the hole is to be punched.

6.2 Punch a $\frac{1}{8}$ in. diameter hole on the long axis of the specimen. The center of the hole should be $\frac{5}{32}$ in. from the end on which the thickness was measured.

6.3 Grip the yoke in one of the testing machine jaws. Place the end of the specimen containing the hole between the arms of the yoke and pass the steel rod through the holes in the yoke and the specimen. Clamp the free end of the specimen in the other testing machine grip. Operate the machine at 10 ± 2 in. per minute until the specimen starts to tear. At the instant that tearing begins, note and record the load registered by the machine.

7. Calculation

7.1 Calculate the pounds per in. thickness as follows:

$F = \text{lb at initial tear}$

Stitch tear strength = F/T

¹ This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.01 on Vegetable Leather.

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