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Standard Test Method for Cracking Resistance of Leather¹

This standard is issued under the fixed designation D6075; 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 (ϵ) 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 This test method covers the determination of the resistance of leather to cracking when the leather is bent or folded with the grain (or finish) surface on the outside of the bend. Heavy leathers (for example, harness, belt, strap, bag, case, and so forth) are usually bent around a mandrel using either mechanical resistance (for example, clamp, vise, and so forth) or by hand. Lighter leathers (for example, shoe upper, upholstery, garment, glove, and so forth) are usually given a sharp double-fold (crosswise) bend after cooling to a low temperature. This test method does not apply to wet blue.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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:*²
[D1517 Terminology Relating to Leather](#)
[D1610 Practice for Conditioning Leather and Leather Products for Testing](#)

3. Terminology

3.1 For definitions of general leather terms used in this test method, refer to Terminology [D1517](#).

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. This test method is a combination of three methods (that is, Methods 4011, 4021, and 7211) that were part of Federal Test Method Standard No. 311. This test method was developed in cooperation with the U.S. Defense Personnel Support Center, Directorate of Clothing and Textiles, Philadelphia, PA and the U.S. Army Natick Research, Development and Engineering Center Natick, MA.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2 Definitions:

3.2.1 *finish cracking*—the appearance of cracks (that is, ruptures) in the finish of leather which may extend through the finish layer to the surface of the crust leather or deeper.

3.2.2 *grain cracking*—the appearance of cracks (that is, ruptures of the grain enamel) on the grain surface of the leather which may even extend deeper into the leather cross section.

4. Summary of Test Method

4.1 A specimen of leather is conditioned and then bent by one of three procedures. The grain (or finish) surface of the bent specimen is then examined for the appearance of any cracks or ruptures in the area around the bend.

4.1.1 One bending procedure for heavier leathers involves a mandrel rod, a metal bar with thickness equal to the diameter of the mandrel, and a large clamp or vise to force and hold the leather in the bent configuration around the mandrel with the metal bar placed between the flesh surfaces of the bent leather.

4.1.2 A second bending procedure for heavier leathers involves bending the leather around a mandrel by hand and forcing and holding the leather so the flesh surfaces of the bent leather are in contact.

4.1.3 A third bending procedure for lighter leathers involves cooling the leather specimen and then creating a sharp double (crosswise) fold while the specimen remains in the cold chamber.

5. Significance and Use

5.1 This test method is designed to determine the cracking resistance of the grain or finish surface of leather on a pass/fail basis. This test method attempts to replicate the conditions that may be encountered by leather that is bent around a buckle frame or other anchoring device, folded over in seams or welts, and so forth. The cracking resistance of leather is influenced by many factors such as quantity, location, and type of fatliquoring materials; moisture content; thickness; the presence of defects or scar tissue, or both; the presence of processing damages to the skin or hide tissue; finish system formulation, and so forth. This test method is useful for manufacturing control in the tannery, specification acceptance, and quality control in the end product manufacturing plant.