



Standard Test Method for Archery Bow Component—Cord Material¹

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1. Scope

1.1 This test method establishes the classification and testing of cord as a component material used in the fashioning of bowstrings.

1.2 This test method is not intended to provide information beyond any evaluation of the cord material that would determine its fitness for use other than in the fabrication of completed bowstrings.

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:

- D 76 Specification for Tensile Testing Machines for Textiles²
- D 123 Terminology Relating to Textiles²
- D 204 Test Methods for Sewing Threads²
- D 1776 Practice for Conditioning Textiles for Testing²
- D 1907 Test Method for the Yarn Number by the Skein Method²
- D 2256 Test Method for Tensile Properties of Yarns by the Single Strand Method²

3. Terminology

3.1 *bowstring, n*—completed assembly constructed in part from multiple strands of cord material lashed at the center and loop ends with serving string materials and used to connect the limbs of a bow by which to launch an arrow.

3.2 *cord material, n*—applied to a variety of natural or manmade textile materials. Cord material may be of monocord, twisted, cable, or braided construction.

3.3 *denier, tex, n*—direct yarn numbering systems expressing size of cord material in terms of mass (weight) of unit length per 9000 m (9842 yd) for denier or 1000 m (1094 yd) for tex.

3.4 *diameter, n*—a measure of the thickness of the cord material.

3.5 *EASL, n*—elongation at a set load.

3.6 *elongation, n*—the amount that a cord material stretches measured as a percentage of the original length either at the point of rupture or at some other interval of applied load.

3.7 *free gage length, n*—length of unsupported test specimen between holding clamps and free from contact with any snubbing or other sources that could result in nonuniform gage length measurement.

3.8 *static load stretch/relaxation, n*—a measure of the amount a cord material moves while under static load and with load subsequently removed, measured as a percentage of the prestressed original length.

3.9 *standard condition, n*—a condition reached by cord material when in moisture equilibrium with a standard atmosphere of a given temperature and relative humidity.

3.10 *strength, n*—the maximum force applied to a cord material causing it to break.

4. Significance and Use

4.1 This test method is intended to provide the user of cord materials for bowstrings the basic information for evaluation and procurement.

4.2 This test method is not meant to be all inclusive since special circumstances may occur that will dictate the use of nonconforming procedures for evaluation. Special circumstances and the requirements they establish cannot be anticipated totally and, therefore, must be considered on an individual basis.

5. Test Methods

5.1 *Standard Condition*—Refer to Practice D 1776 for standard condition requirements:

$$70 \pm 2^\circ\text{F} (21 \pm 1^\circ\text{C}), 65 \pm 2 \% \text{ relative humidity.} \quad (1)$$

5.2 *Denier, Tex*—Refer to Test Method D 1907, Option 1:

5.2.1 Wind 12-yd reeling using 1.5-yd perimeter reel. Do not tie reeling ends; rather, cut at overlap of stated yardage. Weigh reeling to the nearest 1 mg.

5.2.2 *Calculation*—Report test results as one test specimen/sample and average of three samples:

$$(C \times W)/L = (1) \text{ Denier or } (2) \text{ Tex} \quad (2)$$

where:

C = (1) 9842 (denier constant) or (2) 1094 (tex constant),

W = weight of reeled yardage, g,

L = length of reeled yardage.

¹ This test method is under the jurisdiction of ASTM Committee F-8 on Sports Equipment and Facilities and is the direct responsibility of Subcommittee F08.16 on Archery Products.

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² *Annual Book of ASTM Standards*, Vol 07.01.