



Standard Test Methods for Archery Bowstring Component—Serving String Material¹

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1. Scope

1.1 These test methods cover the classification and testing of serving string as a component material used in the fashioning of archery bowstrings.

1.2 These test methods are not intended to provide information beyond any evaluation of the serving string material that would determine its fitness for use other than in the fabrication of the completed bowstring.

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

- D 76 Specification for Tensile Testing Machines for Textiles
- D 123 Terminology Relating to Textiles
- D 204 Test Methods for Sewing Threads
- D 1776 Practice for Conditioning and Testing Textiles
- D 2256 Test Method for Tensile Properties of Yarns by the Single-Strand Method

3. Terminology

3.1 Definitions:

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

3.1.2 *diameter*—a measure of the thickness of the serving string material.

3.1.3 *elongation*—the amount that a serving string material stretches; measured as a percentage of the original length either at the point of rupture or at some other interval of applied load.

3.1.4 *serving string*—applied to a variety of natural or man-made textile materials, serving string material may be of monocord, twisted, cable, braided, or monofilament construction.

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

3.1.6 *strength*—the maximum force applied to a serving string material causing it to break.

4. Significance and Use

4.1 These test methods are intended to provide basic information for evaluation and procurement for the user of serving string materials for bowstrings.

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

5. Test Methods

5.1 Refer to Practice D 1776 for standard condition requirements.

5.1.1 *Standard Conditions*— $70 \pm 2^\circ\text{F}$ ($21 \pm 1^\circ\text{C}$), $65 \pm 2\%$ relative humidity.

5.2 Refer to Test Method D 2256 for strength and elongation requirements.

5.2.1 Set CRE-type testing machine at $12 \pm 0.5\text{-in.}$ ($305 \pm 10\text{-mm}$)/min draw rate with gage length as follows:

5.2.1.1 $10 \pm 0.1\text{ in.}$ ($250 \pm 3\text{ mm}$) from nip for pneumatic flat-faced clamps, or

5.2.1.2 $5 \pm 0.1\text{-in.}$ ($125 \pm 3\text{-mm}$) free gage length for capstan-type clamps.

5.2.1.3 Report test results as the average of five test specimens per sample and the average of three test samples.

5.2.2 Elongation tests using capstan clamps are measured at 80 % of test specimen average breaking load using 100-mm index marks arbitrarily marked along the 5-in. free gage length due to possible stretching of the test specimen around the capstans. Arbitrarily mark 100-mm index marks along the 5-in. free gage length of the mounted test specimen, and measure the change in length of index marks after applying load to the test

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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.

specimen equal to 80 % of test specimen average breaking load. Report test results entitled as EASL 80 % as the average of five test specimens per sample and the average of three test samples.

5.3 Refer to Test Method **D 204** for diameter requirements.

5.3.1 *Diameter*— 0.375 ± 0.001 -in. (9.52 ± 0.02 -mm) anvil weighted to apply 6 ± 0.1 ozf (1.67 ± 0.03 N). Report the test results as the average of five test specimens and the average of three test samples.

6. Keywords

6.1 bowstring; diameter; elongation; serving string; strength

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