



Standard Practice for Physical Characterization of Woven Paint Applicator Fabrics¹

This standard is issued under the fixed designation D 6337; 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.

1. Scope

1.1 This practice covers the dimensions, terminology, and characteristics generally considered of importance to those dealing with woven paint applicator fabrics and describes methods for determining these parameters. This practice is not meant to be a definitive analytical method to reformulate woven fabrics.

1.2 The values stated in inch/pound units are to be regarded as the standard. The SI values given in parentheses are provided 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:

- D 123 Terminology Relating to Textiles²
- D 1776 Practice for Conditioning Textiles for Testing²
- D 1777 Test Method for Measuring Thickness of Textile Materials²
- D 3774 Test Method for Width of Woven Fabric³
- D 3775 Test Method for Fabric Count of Woven Fabric³
- D 3776 Test Methods for Mass Per Unit Area (Weight) of Fabric³

3. Terminology

3.1 *Definitions:* (see also Terminology D 123)

3.1.1 *backcoating*—a resin coating that is usually applied to the back of a fabric and heat cured to enhance its stability.

3.1.2 *backing*—a set of warp yarns or ends of defined composition that help create the base of a fabric that runs the length of the fabric (see Fig. 1).

3.1.3 *case of fabric*—a box of cloth, ready for shipping, usually consisting of slit reels.

3.1.4 *dyelot*—a specific quantity that is processed together

¹ This test method is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.61 on Paint Application Tools.

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

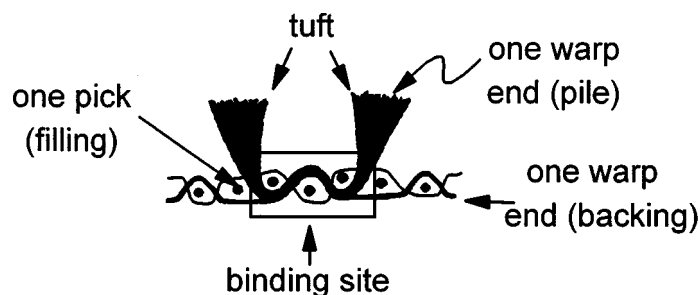


FIG. 1 Components of Typical Pile Fabric

and can be comparatively ranked within or among other dyelots.

3.1.5 *end*—one warp yarn (see Fig. 1).

3.1.6 *fiber*—an individual strand or filament of finite or continuous length that may be of a natural or synthetic origin.

3.1.7 *filling*—an individual yarn of defined composition that interlaces with warp ends at right angles in a woven fabric to help form the base of a pile fabric (see Fig. 1).

3.1.8 *laboratory sample*—a sample from each case of fabric for acceptance testing.

3.1.9 *lot sample*—a sample for acceptance testing consisting of a random number of dyelots as directed in agreement between purchaser and supplier.

3.1.10 *pick*—one filling yarn (see Fig. 1).

3.1.11 *pick glass*—an instrument with a magnifying lens and a set viewing field of one square inch used to identify construction (see Fig. 2).

3.1.12 *pile*—an additional set of warp yarns or ends of defined composition that are introduced into a pile fabric to make cut or uncut loops on the surface that are approximately perpendicular to the plane of the backing and filling (see Fig. 1).

3.1.13 *pile fabric*—a three-dimensional cloth with interlacing at right angles of three systems of yarn as warp, fill, and pile.

3.1.13.1 *Discussion*—Pile fabrics have a fur-like face that can consist of cut or uncut loops.

3.1.14 *pile fabric composition*—the total make-up of the fabric, being either natural or synthetic, or a combination.

3.1.15 *pile height micrometer*—a thickness testing instrument, referenced in Test Method D 1777.

3.1.15.1 *Discussion*—It consists of 4-in. (102-mm) diameter presser foot controlled by a lever, a gage with readings to

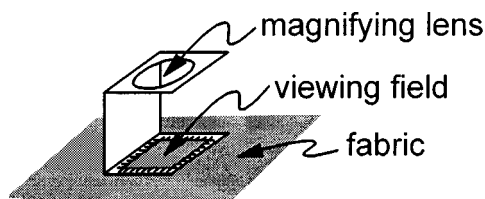


FIG. 2 Pick Glass

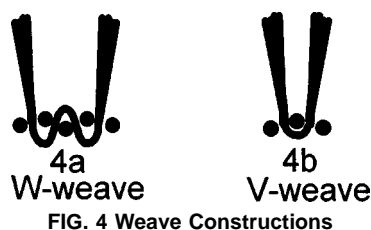


FIG. 4 Weave Constructions

the nearest 0.001 in. (0.025 mm) and a horseshoe-shaped handle that will measure 6 in. (152.4 mm) in to the body of the fabric (see Fig. 3).

3.1.16 *pile tuft density*—the quantity of pile per unit area as stated in pile tufts per square inch.

3.1.17 *reel*—a specified length of slit goods rolled together as one unit.

3.1.18 *shearable pile*—the pile tufts above the backing that can be removed with shear clippers.

3.1.19 *slitting*—a means of cutting the full width of fabric into longitudinal strips.

3.1.20 *slit width*—the width dimension of a fabric strip after slitting.

3.1.21 *test specimen*—a specimen cut from a reel of fabric.

3.1.21.1 *Discussion*—Each specimen shall be 6 in. (152.4 mm) in length, with one side of each specimen parallel to the warp ends.

3.1.22 *total fabric density*—fabric weight in ounces per square yard of finished fabric.

3.1.23 *tuft*—the entire loop that forms the face of the fabric and is attached to the backing fabric at a binding site (see Fig. 1).

3.1.24 *weave construction*—one repeat of a pattern, including per inch, ends per inch, and the way the pile weaves into the base of the cloth, for example, *W-weave*, *V-weave*.

3.1.24.1 *W-weave*—a weave construction where at least 3 picks are needed to form a tuft with the resulting tuft resembling the letter “W” (see Fig. 4 (a)).

3.1.24.2 *V-weave*—a weave construction where only one pick is needed to form a tuft. The resulting tuft resembles the letter “V” (see Fig. 4 (b)).

3.1.25 *woven fabric*—a cloth with interlacing at right angles of two systems of yarn known as warp and fill.

3.1.26 *yarn*—the coherent arrangement of fibers of varying or similar length, whose relative positions are maintained by a definite lateral twist to produce strength.

4. Significance and Use

4.1 It is important to recognize that all woven paint applicator fabrics are pile fabrics and can be a combination of

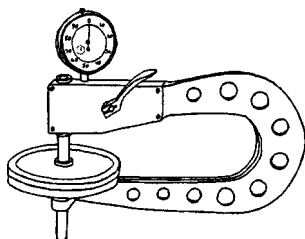


FIG. 3 Pile Height Micrometer

several different yarns, in a range of densities, chemical compositions, and pile heights, which may influence painting performance.

5. Apparatus

5.1 *Pile-Height Micrometer*⁴

5.2 *Graduated Linear Scale*, that measures to 1/32 in. increments (1 mm).

5.3 *Pick Glass*.

5.4 *Balance*, capable of weighing to 0.001 oz (0.10 g).

6. Determination of Physical Characteristics

6.1 *Total Fabric Height*—Determine the total fabric height by measuring the material thickness using a pile height micrometer (see Test Method D 1777). Report the dimensions to the nearest 0.001 in. (0.02 mm).

6.2 *Slit Width*—Determine the width by measuring the back of the cloth from warp end to warp end using a calibrated scale. Report dimensions to the nearest 1/32 in. (0.78 mm), with tolerances of ± 1/32 in. (± 1 mm).

6.3 *Picks per Inch*—Determine picks per inch by counting individual filling yarns through a pick glass. Report to the nearest whole number with a tolerance of ± one pick.

6.4 *Total Fabric Density*—Determine the ounces per square yard using the balance (see Test Methods D 3776). Report fabric density to the nearest 0.001 oz/yd² (0.10 g/m²).

6.5 *Pile Tuft Density*—The weave construction (*W-weave* or *V-weave*) must be known to determine the pile density. Report pile tuft density in tufts per square inch.

6.6 *Shearable Pile Density*—Determine the amount of pile that is above the backing. Report amount to the nearest 0.001 oz. (0.10 g).

6.7 *Pile Tuft Height*—Determine the pile tuft height by measuring the length of the tuft using a graduated linear scale. Report the length to the nearest 1/32 in. (1 mm).

7. Sampling

7.1 Tests shall be performed on the fabric as it will reach the purchaser.

7.2 Select the lot samples as specified for each test method. In the absence of such instructions in a specific test method, select lot sample as agreed upon between the purchaser and the supplier.

⁴ The sole source of supply of the pile height micrometer known to the committee at this time is the Andrews Equipment Co., 4619 Torresdale Ave., Philadelphia, PA 19124. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.