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Standard Test Method for Needle-Related Damage Due to Sewing in Woven Fabric¹

This standard is issued under the fixed designation D 1908; 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 test method evaluates the damage caused by sewing machine needles when a specific sewn seam assembly is used for a woven fabric.

1.2 The index of needle damage as determined by this test method is significant only for the fabric and sewn seams being evaluated using this test method.

1.2.1 The index compiles the damage done by fusing, deflection, or severance of yarns in the fabric tested.

1.3 The sewn seams to be indexed should be taken from either previously sewn articles or from sewn seams prepared in accordance with a prescribed seam assembly.

1.4 The index produced by this test method can be used to determine proper needle selection for a particular fabric.

1.5 The values stated in SI units are to be regarded as standard. The values stated in inch-pound units are provided for information only.

1.6 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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 2724 Test Methods for Bonded, Fused, and Limited Apparel Fabrics³

2.2 Federal Standard:

No. 751a Stitches, Seams and Stitchings⁴

2.3 AATCC Method:

143 Appearance of Apparel and Other Textile End Products After Repeated Home Laundering⁵

3. Terminology

3.1 Definitions:

3.1.1 *grin*, *v—in sewn seams*, to stress a seam so that the individual stitches can be seen.

3.1.2 *needle damage*, *n—in sewn fabrics*, the partial or

complete yarn severance or fiber fusing caused by a needle passing through a fabric during sewing.

3.1.3 *refurbish*, *v—as applied to textile products*, to brighten or freshen up and restore to wearability or use by cleaning such as drycleaning, laundering or steam cleaning.

3.1.4 *seam allowance*, *n—in sewn fabrics*, the distance from the edge of a fabric to the parallel stitch line furthest from that edge.

3.1.5 *seam assembly*, *n—the composite structure obtained when fabric(s) are joined by means of a seam.*

3.1.5.1 *Discussion*—A sewn seam assembly may be described in terms of the fabric orientation, seam direction, seam type, stitch type, seam allowance, sewing thread tex ticket number(s) and type(s), stitch density, stitch gage, and rows of stitching.

3.1.6 *seam damage*, *n—in sewn fabrics*, any change in the physical condition of one or more of the components in a seam which reduces seam efficiency.

3.1.7 *seam type*, *n—in sewn seams*, an alphanumeric designation relating to the essential characteristics of fabric positioning and rows of stitching in a specified sewn fabric seam.

3.1.7.1 *Discussion*—Seam types are described in Fed. Std. No. 751a.

3.1.8 *sewn seam*, *n—in sewn fabrics*, a juncture at which two or more planar structures such as textile fabrics, are joined by sewing, usually near the edge.

3.1.9 *stitch*, *n—in sewn seams*, the repeated unit formed by the sewing thread in the production of seams.

3.1.10 *stitch density*, *n—in sewn seams*, the number of stitches per unit length in one row of stitching in the seam.

3.1.11 *stitch gage*, *n—in sewn fabrics*, the perpendicular distance between adjacent parallel rows of stitching.

3.1.12 *stitch type*, *n—in sewn seams*, a numerical designation relating to the essential characteristics of the interlacing of sewing thread(s) in a specified stitch.

3.1.12.1 *Discussion*—Stitch types are described in Fed. Std. No. 751a.

3.1.13 For definitions of other textile terms used in this method, refer to Terminology D 123.

4. Summary of Test Method

4.1 Seams taken from manufactured items already sewn or seams prepared in accordance with a prescribed seam assembly, or an assembly agreed upon by purchaser and supplier are evaluated to determine the damage caused by sewing machine needles in the warp, filling, or bias direction.

4.1.1 This test method provides for determining a ratio, expressed as an index, of either the damaged yarns to the total number of yarns present in a seam assembly, or the damaged yarns to the total number of needle penetrations.

¹ This test method is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.54 on Consumer Product Performance.

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² Annual Book of ASTM Standards, Vols 07.01 and 07.02.

³ Annual Book of ASTM Standards, Vol 07.01.

⁴ Available from Government Printing Office, GSA, 7th & D Streets, S.W., Washington, DC 20407.

⁵ Available from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.