



Designation: D 3884 – 01

An American National Standard

Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)¹

This standard is issued under the fixed designation D 3884; 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 guide covers the determination of the abrasion resistance of textile fabrics using the rotary platform, double-head tester (RPDH).

NOTE 1—Other procedures for measuring the abrasion resistance of textile fabrics are given in Test Methods D 3885, D 3886, D 1775, D 4158, D 4966, and AATCC 61.

1.2 The values stated in SI units are to be regarded as standard; the values in English units are provided as information only and are not exact equivalents.

1.3 *This standard does not purport to address all of the safety problems, 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 1775 Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder and Uniform Abrasion Methods)²
- D 1776 Practice for Conditioning and Testing Textiles²
- D 3885 Test Method for Abrasion Resistance of Textile Fabrics (Flexing and Abrasion Method)³
- D 3886 Test Method for Abrasion Resistance of Textile Fabrics (Inflated Diaphragm Method)³
- D 4158 Test Method for Abrasion Resistance of Textile Fabrics (Uniform Abrasion Method)³
- D 4966 Test Method for Abrasion Resistance of Textile Fabrics (Martindale Abrasion Tester)³
- D 5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)³
- D 5035 Test Method for Breaking Force and Elongation of

Textile Fabrics (Strip Method)³

2.2 Other Documents:

AATCC 93 Impeller Tumble Method³

3. Terminology

3.1 Definitions:

3.1.1 *abrasion, n*—the wearing away of any part of a material by rubbing against another surface.

3.1.2 *abrasion cycle, n*—in *abrasion testing*, one or more movements of the abradant across a material surface, or the material surface across the abradant, that permits a return to its starting position.

3.1.2.1 *Discussion*—The abrasion cycle is dependent on the programmed motions of the abrasion machine and the test standard used. It may consist of one back-and-forth unidirectional movement such as for the rotary platform test method, or a combination of both such as for the inflated diaphragm test method. For the oscillatory cylinder abrasion method, an abrasion cycle consists of one circular movement of the specimen.

3.1.3 *breaking force, n*—the maximum force applied to a material carried to rupture. (Compare *breaking point*, *breaking strength*).

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

4. Summary of Test Method

4.1 A specimen is abraded using rotary rubbing action under controlled conditions of pressure and abrasive action. The test specimen, mounted on a platform, turns on a vertical axis, against the sliding rotation of two abrading wheels. One abrading wheel rubs the specimen outward toward the periphery and the other, inward toward the center. The resulting abrasion marks form a pattern of crossed arcs over an area of approximately 30 cm². Resistance to abrasion is evaluated by various means which are described in Section 12.

5. Significance and Use

5.1 The measurement of the resistance to abrasion of textile and other materials is very complex. The resistance to abrasion is affected by many factors, such as the inherent mechanical properties of the fibers; the dimensions of the fibers; the structure of the yarns; the construction of the fabrics; and the

¹ This guide is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.60 on Fabric Test Methods, Specific.

Current edition approved Sept. 10, 2001. Published November 2001. Originally published as D 3884 – 80. Discontinued January 2001 and reinstated as D 3884 – 01. Last previous edition D 3884 – 80.

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

³ *Annual Book of ASTM Standards*, Vol 07.02.