



Standard Test Method for Measuring Cut Resistance of Materials Used in Protective Clothing with Tomodynamometer (TDM-100) Test Equipment¹

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1. Scope

1.1 This test method covers the measurement of the cut resistance of a material when mounted on a mandrel and subjected to a cutting edge under a specified load using the Tomodynamometer (TDM-100).

1.1.1 This procedure is not valid for high-porosity materials which allow cutting edge contact with the mounting surface prior to cutting.

1.1.2 Test apparatus may have limitations in testing materials with a thickness greater than 20 mm.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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

[D123 Terminology Relating to Textiles](#)

[D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications](#)

[D1776 Practice for Conditioning and Testing Textiles](#)

[F1494 Terminology Relating to Protective Clothing](#)

[F1790 Test Method for Measuring Cut Resistance of Mate-](#)

[rials Used in Protective Clothing with CPP Test Equipment](#)

2.2 ISO Standards:³

[ISO 13997 Protective Clothing—Mechanical Properties—Determination of Resistance to Cutting by Sharp Objects](#)

3. Terminology

3.1 Definitions:

3.1.1 *cut resistance, n*—in blade cut testing, the property that hinders cut through when a material or a combination of materials is exposed to a sharp-edged device.

3.1.2 *cut through, n*—in blade cut resistance tests, the penetration of the cutting edge entirely through material as indicated by electrical contact of the cutting edge and the conductive strip or substrate.

3.1.3 *cut through distance, n*—in cut resistance testing, the distance of required travel by the cutting edge to cut through the specimen.

3.1.4 *cutting edge, n*—in cut resistance tests, a sharp-edged device used to initiate cut through of a planar structure.

3.1.5 *no cut, n*—in cut resistance testing, a trial for which the load used is insufficient to cause a cut through in the maximum allowable blade travel of the apparatus.

3.1.5.1 *Discussion*—For this test method, the maximum allowable blade travel is 65 mm [2.6 in.].

3.1.6 *protective clothing, n*—an item of clothing that is specifically designed and constructed for the intended purpose of isolating all or part of the body from a potential hazard; or, isolating the external environment from contamination by the wearer of the clothing.

3.1.6.1 *Discussion*—In this test method, the potential hazard is cutting.

3.1.7 *calculated cutting load, n*—in cut resistance testing, the load required to cause a cutting edge to produce a cut through when it traverses the reference distance across the material being tested.

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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.

³ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <http://www.iso.org>.