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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 3917.3-2025

**Textiles - Tear properties of fabrics - Part 3: Determination of
tear force of trapezoid-shaped test specimens**

(English Translation)

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020

Directives for standardization - Part 1.Rules for the structure and drafting of
standardizing documents.

This document is Part 3 of GB/T 3917 Textiles - Tear properties of fabrics. The
following parts of GB/T 3917 have been published.

- Part 1.Determination of tear force using ballistic pendulum method (Elmendorf);
- Part 2.Determination of tear force of trouser-shaped test specimens (Single tear
method);
- Part 3.Determination of tear force of trapezoid-shaped test specimens;
- Part 4.Determination of tear force of tongue-shaped test specimens (Double tear
test);
- Part 5.Determination of tear force of wing-shaped test specimens (Single tear
method).

This document replaces GB/T 3917.3-2009 Textiles - Tear properties of fabrics - Part

3 Determination of tear force of trapezoid-shaped test specimens. Compared with

GB/T 3917.3-2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

-- The scope of application of the standard is modified (see Chapter 1; see Chapter

1 of the 2009 edition);

-- The term "constant rate of traverse testing machine" is added, and the term "length of tear" is deleted (see 3.2; see 3.5 of the 2009 edition);

-- The test principle for nonwoven fabrics is added, and the description of the test principle for woven fabrics is improved (see Chapter 4);

-- The features that the testing machine and clamp shall have are added (see 5.1 and 5.2);

-- The apparatus and consumables required for testing wet test specimens are added (see 5.4, 5.5, 5.6, and 5.7);

-- The sample preparation for wet test is added (see 7.3 and 7.4);

Textiles - Tear properties of fabrics - Part 3.Determination
of tear force of trapezoid-shaped test specimens

1 Scope

This document describes the determination of the tear force of fabrics by using the trapezoid-shaped test specimen method.

This document applies to woven fabrics (except woven elastic fabrics) and nonwovens.

2 Normative references

The provisions of the following documents constitute the essential clauses of this document through normative references in this text. Among them, for referenced documents with dates, only the versions corresponding to the dates are applicable to this document; for referenced documents without dates, the latest versions (including all amendments) are applicable to this document.

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing (GB/T 6529-2008, ISO 139.2005, MOD)

GB/T 6682 Water for analytical laboratory use - Specification and test methods (GB/T 6682-2008, ISO 3696.1987, MOD)

GB/T 16825.1-2022 Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1. Tension/compression testing machines - Calibration and verification of the force-measuring system (ISO 7500-1.2018, IDT)

GB/T 19022 Measurement management systems - Requirements for measurement processes and measuring equipment (GB/T 19022-2003, ISO 10012.2003, IDT)

3 Terms and definitions

The following terms and definitions apply to this document.

The URLs for terminology databases used for standardization, maintained by ISO and IEC, are as follows.

3.1 constant rate of extension testing machine; CRE testing machine

An extension testing machine, one of whose clamps holding the test specimen is fixed and the other moves at a constant speed during the entire test process.

3.2 constant rate of traverse testing machine; CRT testing machine

A testing machine, one of whose clamps pulls and moves at a constant speed, and the other that drives the heavy hammer mechanism applies load.

NOTE: The rate of increase of load or elongation of the test specimen during the test depends on the elongation characteristics of the test specimen.

3.3 gauge length

The distance between the two effective clamping lines on the test device for clamping the test specimen.

NOTE: The effective clamping point (line) of the clamp is generally checked by the following method. clamp a piece of white paper with carbon paper attached to it to produce clamping lines on the paper.

3.4 tear force

The force required to extend a test specimen from the initial notch under specified conditions.

NOTE 1: For woven fabrics, the force by which the warp yarn is torn is called the "warp tear force", and

the force by which the weft yarn is torn is called the "weft tear force".

NOTE 2: For nonwoven fabrics, the force required to tear in the transverse direction is called "transverse

tear strength", and the force required to tear in the longitudinal direction is called "longitudinal tear

strength".

3.5 peak

On the strength-elongation curve, the force value corresponds to the point where the slope changes from positive to negative.

NOTE: The rising value and falling force values at both ends of the peak used for calculation shall be at

least 10% of the falling value of the previous peak or the rising value of the next peak.

3.6 trapezoid-shaped test specimen

A rectangular fabric specimen for the tear test.

NOTE: The test specimen is marked with two specimen-clamping marking lines of specified size to form an isosceles trapezoid. A notch of specified size is cut in the center of the short side of the trapezoid.

4 Principle

A trapezoid is drawn on the test specimen and a specified notch is cut in the center of the short side of the trapezoid. The clamps of the constant rate of extension testing machine (CRE) are used to clamp the two non-parallel sides of the trapezoid. A continuously increasing force is applied to the test specimen to make the tear propagate along the width direction of the test specimen. The force of continuous tearing over the specified distance is recorded. For woven fabrics, the arithmetic mean of the effective