
Vlaknovine - Preskusne metode - 3. del: Ugotavljanje natezne trdnosti in pretržnega raztezka pri pretrganju s tračno metodo (ISO/DIS 9073-3:2022)

Nonwovens - Test methods - Part 3: Determination of tensile strength and elongation at break using the strip method (ISO/DIS 9073-3:2022)

Vliesstoffe – Prüfverfahren – Teil 3: Bestimmung der Höchstzugkraft und der Höchstzugkraftdehnung (ISO/DIS 9073-3:2022)

Nontissés - Méthodes d'essai - Partie 3: Détermination de la résistance à la traction et de l'allongement à la rupture par la méthode sur bande (ISO/DIS 9073-3:2022)

Ta slovenski standard je istoveten z: prEN ISO 9073-3

oSIST prEN ISO 9073-3:2022
<https://standards.itec.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500ce1e/osist-pren-iso-9073-3-2022>

ICS:

59.080.30 Tkanine Textile fabrics

oSIST prEN ISO 9073-3:2022 **en,fr,de**

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[oSIST prEN ISO 9073-3:2022](https://standards.iteh.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-2022)

[https://standards.iteh.ai/catalog/standards/sist/1efe4267-
fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-
2022](https://standards.iteh.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-2022)

DRAFT INTERNATIONAL STANDARD

ISO/DIS 9073-3

ISO/TC 38

Secretariat: SAC

Voting begins on:
2022-05-11

Voting terminates on:
2022-08-03

Nonwovens — Test methods —

Part 3:

Determination of tensile strength and elongation at break using the strip method

ICS: 59.080.30

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN ISO 9073-3:2022](https://standards.iteh.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-2022)
[https://standards.iteh.ai/catalog/standards/sist/1efe4267-
fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-
2022](https://standards.iteh.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-2022)

This document is circulated as received from the committee secretariat.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

ISO/CEN PARALLEL PROCESSING



Reference number
ISO/DIS 9073-3:2022(E)

© ISO 2022

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

oSIST prEN ISO 9073-3:2022
[https://standards.iteh.ai/catalog/standards/sist/1efe4267-
fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-
2022](https://standards.iteh.ai/catalog/standards/sist/1efe4267-fe9a-4130-83fc-77c2500cee1e/osist-pren-iso-9073-3-2022)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Principle.....	4
5 Reagents and materials.....	4
6 Apparatus.....	4
7 Sampling.....	4
7.1 Laboratory sample.....	5
7.2 Test specimens.....	5
8 Conditioning.....	6
8.1 Dry sample testing.....	6
8.2 Wet sample testing.....	6
9 Preparation of specimens.....	6
9.1 General.....	6
9.2 Strip test — Option A.....	6
9.3 Strip test — Option B.....	6
9.4 When the breaking force of wet fabric.....	6
10 Preparation, calibration and verification of apparatus.....	7
10.1 Tensile testing machine.....	7
10.1.1 Set the distance between the clamps.....	7
10.1.2 Select the force range of the testing machine.....	7
10.1.3 Set the testing machine constant rate of extension.....	7
10.2 Clamping system.....	7
10.3 Verification of the total operating system of the apparatus.....	7
11 Procedure.....	8
11.1 Mount the specimen securely in the clamp of the testing machine.....	8
11.2 Mark across the specimen at the front inner edge.....	8
11.3 Engage the machine.....	8
11.4 Read the breaking force.....	8
11.5 If a specimen slips in the jaws or breaks at the edge of or in the jaws.....	8
11.6 If a material manifests any slippage in the jaws.....	9
12 Calculation.....	9
12.1 Breaking force.....	9
12.2 Measurement of apparent elongation.....	9
12.3 For each testing situation.....	9
13 Precision.....	9
14 Report.....	9
Annex A (Informative) Precision.....	11

ISO/DIS 9073-3:2022(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, WG9, *Nonwovens*.

This second edition cancels and replaces the first edition (ISO 9073-3:1989), which has been technically revised.

The main changes compared to the previous edition are as follows:

- Title change
- Textual review and improvement
- [Clause 8.2](#) revised

A list of all parts in the ISO 9073 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Nonwovens — Test methods —

Part 3:

Determination of tensile strength and elongation at break using the strip method

SAFETY WARNING — This document does not claim to address all 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. It is expected that the person performing this test has been fully trained in all aspects of this procedure.

1 Scope

This document specifies a test method for the determination of the breaking force and elongation of nonwovens using a strip method in conditioned or wet state. This test method describes two procedures, Option A and Option B, for carrying out nonwoven material tensile tests. These two procedures use two types of specimens which are listed below, and three alternative types of testing machines are also listed below. CRE is the instrument of choice.

Type of specimen:

a) Option A – 25 mm strip tensile

b) Option B – 50 mm strip tensile

Style of tensile testing machine:

a) Constant-rate-of-extension (CRE)

b) Constant-rate-of-load (CRL)

c) Constant-rate-of-traverse (CRT)

SI values are regarded as the official standard system of measurement for this standard procedure. If other systems of measurement are used in place of SI units their values must be reported independently. Systems of measurement must not be combined in any way, but shall be regarded and reported separately.

NOTE INDA has sponsored studies comparing both options A and B. Studies indicated that if option A was performed using option B's 50 mm wide material, the result for both options would harmonize, giving the same results, regardless of the other machine settings.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO/DIS 9073-3:2022(E)

ISO 3951-1, *Sampling procedures for inspection by variables-- Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

NWSP 001.0, *Standard Terminology Relating to the Nonwoven Industry, EDANA's and INDA's Standard Procedures*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1
breaking force
maximum force applied to a material carried to rupture

3.2
maximum force
maximum force appearing during a test specimen carried to rupture in a tensile test under the specified conditions

3.3
constant-rate-of-extension (CRE) tensile testing machine
tensile-testing machine provided with one clamp which is stationary and another clamp which moves with constant speed throughout the test, the entire testing system being virtually free from deflection.

3.4
constant-rate-of-load (CRL) tensile testing machine
testing machine in which the rate of increase of the load being applied to the specimen is uniform with time after the first 3 seconds

3.5
constant-rate-of-traverse (CRT) tensile testing machine
testing machine in which the pulling clamp moves at a uniform rate and the load is applied through the other clamp which moves appreciably to actuate a weighing mechanism, so that the rate of increase of load or elongation is dependent upon the extension characteristics of the specimen

3.6
cut strip test
in nonwovens, strip test in which the specimen is cut to the specified testing width, i.e. 25 or 50 mm wide

3.7
elongation
deformation in the direction of load caused by a tensile force

Note 1 to entry: Note1 to entry Elongation is generally expressed as a ratio of the length of the stretched material as a percentage to the length of the unstretched material. Elongation may be determined by the degree of stretch under a specific load or the point where the stretched material breaks.

3.8
extension
increase in length of a test specimen produced by a force (in this context, stretching)

3.9**sample**

product or portion of a product taken from a production lot for testing purposes, identifiable and traceable back to the origin

3.10

test specimen specific portion of the identified sample upon which a test is performed, many specimens sometimes being tested from the same sample, using different locations

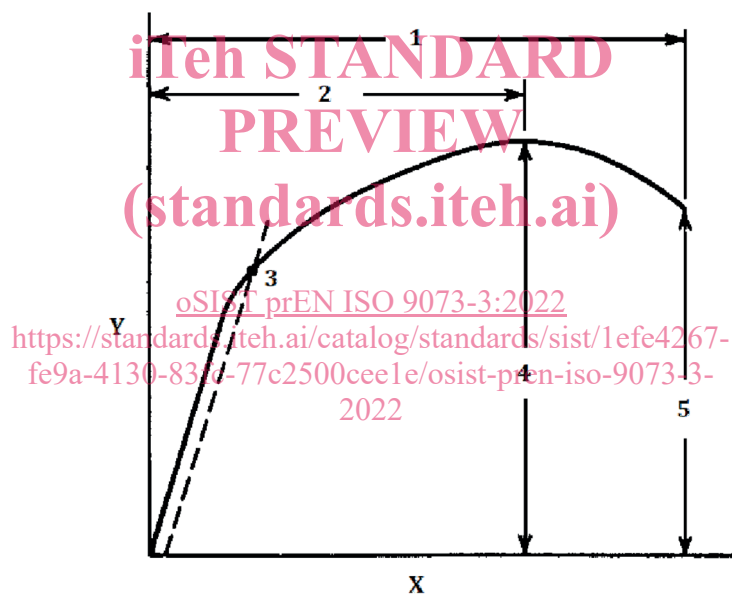
3.11**strip test**

tensile test in which the full width of the test specimen is gripped in the jaws of the testing machine

3.12**tensile strength**

the resistance of a material to breaking under tension

Note 1 to entry: Tensile strength is preferably expressed in Newton.

**Key**

- X conventional strain
- Y average stress
- 1 strain to fracture
- 2 uniform strain
- 3 offset yield strength
- 4 tensile strength
- 5 fracture stress

Figure 1 — Tensile strength

ISO/DIS 9073-3:2022(E)

4 Principle

A test specimen is clamped in a tensile testing machine and a force is applied to the specimen until it breaks. Values for the breaking force and elongation of the test specimen are obtained from machine scales, dials, autographic recording charts, or a computer interface.

The strip test method is considered satisfactory for acceptance testing of commercial shipments of most nonwoven materials.

This procedure is applicable for testing nonwoven materials in either a dry conditioned or wet state.

Comparison of results from tensile testing machines operating on different principles is not recommended. When different types of machines are used for comparison testing, constant time-to-break at (20 ± 3) seconds is the established way of producing data. Even then the data may differ significantly. The constant-rate-of-extension tensile testing machine is preferred for this method.

5 Reagents and materials

5.1 Water, according to ISO 3696, grade 3.

For wet testing

5.2 Nonionic wetting agent.

For wet testing.

5.3 Container, in which test specimens can be immersed in water preparatory to wet testing

6 Apparatus

6.1 Tensile testing machine (CRE, CRL, or CRT)

Must include force indication, working range, capacity, and elongation indicator and designed for operation at:

- a) Option A, a speed of (300 ± 10) mm/min
- b) Option B, a speed of (100 ± 5) mm/min

6.2 Clamps and jaw faces

Each jaw face shall be smooth, flat, and with a metallic or other agreed upon surface. The faces shall be parallel and have matching centres with respect to one another in the same clamp and to the corresponding jaw face of the other clamp.

For all strip tests each jaw face shall measure at least 10 mm wider than the specimen being tested and at least 25 mm in the direction of the applied force.

7 Sampling

Carry out sampling in accordance with ISO 186. Ensuring that the areas from which samples are taken, have no visible flaws and are not creased.

If provided in the customer specification, take random sample as directed. If no requirements are provided, ISO 2859-1 (Sampling procedures for inspection by attributes) or ISO 3951-1 (Sampling procedures for inspection by variables) can be used. In and of themselves, these are not valid sampling plans by default. An agreement between the purchaser and supplier requires taking into account