
**Conveyor belts — Method for the
determination of the tear propagation
resistance of textile conveyor belts**

*Courroies transporteuses — Méthode de détermination de la
résistance à la propagation d'une déchirure dans les courroies
transporteuses à carcasse textile*

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

This document was prepared by ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*. ISO 505:2017

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This fourth edition cancels and replaces the third edition (ISO 505:1999), which has been technically revised and contains the following changes:

- the normative references have been updated.

Conveyor belts — Method for the determination of the tear propagation resistance of textile conveyor belts

1 Scope

This document specifies a method of test for the measurement of the propagation resistance of an initial tear in textile conveyor belts, either in full thickness or of the carcass only.

This test is intended for application to textile belts in installations where there is a risk of longitudinal tearing.

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 6133, *Rubber and plastics — Analysis of multi-peak traces obtained in determinations of tear strength and adhesion strength*

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3 Terms and definitions (standards.iteh.ai)

No terms and definitions are listed in this document.

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

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

4 Principle

The test consists in measuring, by means of tensile testing at a given speed, the force necessary to propagate an initial tear made in a test piece.

5 Apparatus

The apparatus consists of a dynamometric tensile testing machine with the following essential characteristics:

- a) the machine shall be chosen so that the forces to be measured come within the upper 90 % range of its full rated capacity;
- b) the speed of separation of the jaws shall be capable of being adjusted to (50 ± 10) mm/min;
- c) the free distance between the jaws shall be capable of being adjusted to at least 300 mm.

The machine shall be provided with a device for the graphical recording of the force necessary to continue tearing the test piece.

6 Test pieces

6.1 Method of sampling

Test pieces shall be taken from the sample in the longitudinal direction of the belt and at a minimum distance of 50 mm from the edges of the belt.

6.2 Shape and dimensions

Shape: rectangular.

Length: 300 mm.

Width: (100 ± 1) mm.

Thickness: Full belt thickness or without covers.

If it is found that weft threads are pulled out of the test piece instead of breaking, the width of the test piece should be increased to 300 mm.

6.3 Number

Two test pieces shall be used: one in sense A and the other in sense B (see [Figure 4](#)).

6.4 Preparation

Where the test is to be conducted without covers, the covers of the test pieces shall be removed by stripping or by buffing.

If there is a breaker ply, strip the corresponding covers without cutting the breaker ply over a width of 20 mm only, i.e. 10 mm on each side of the longitudinal axis of the test piece with the exception of the zone held in the jaws of the machine (see [Figure 1](#)).

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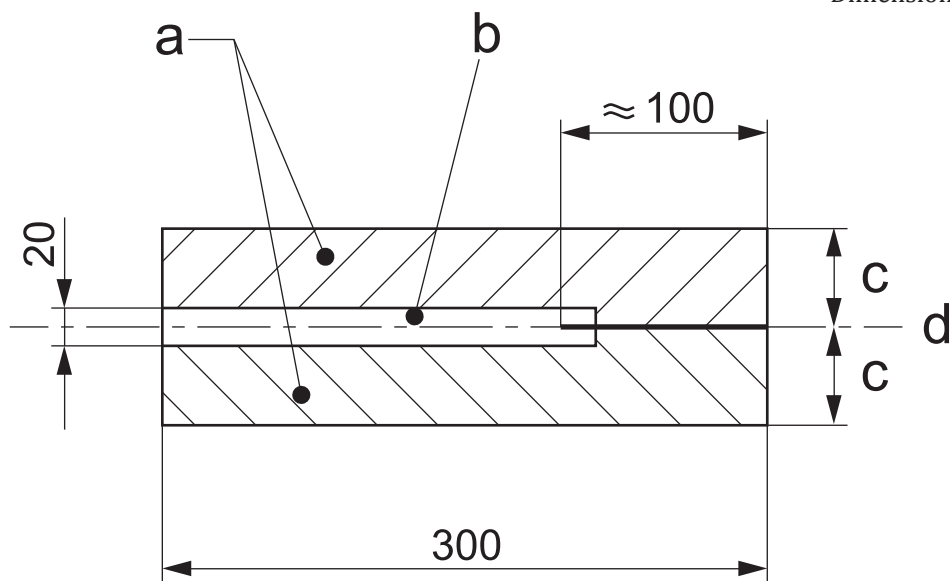
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Dimensions in millimetres



Key

- a with covers
- b covers removed
- c 50 or 150 (see 6.2)
- d cut line

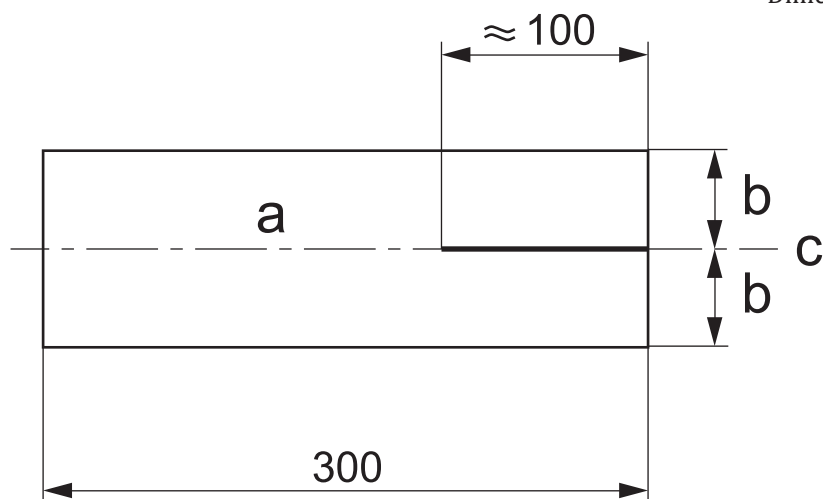
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Figure 1 — Test pieces with breaker

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Cut the test pieces from the middle of one of their ends over a length of about 100 mm parallel to the length (see Figure 2).

Dimensions in millimetres

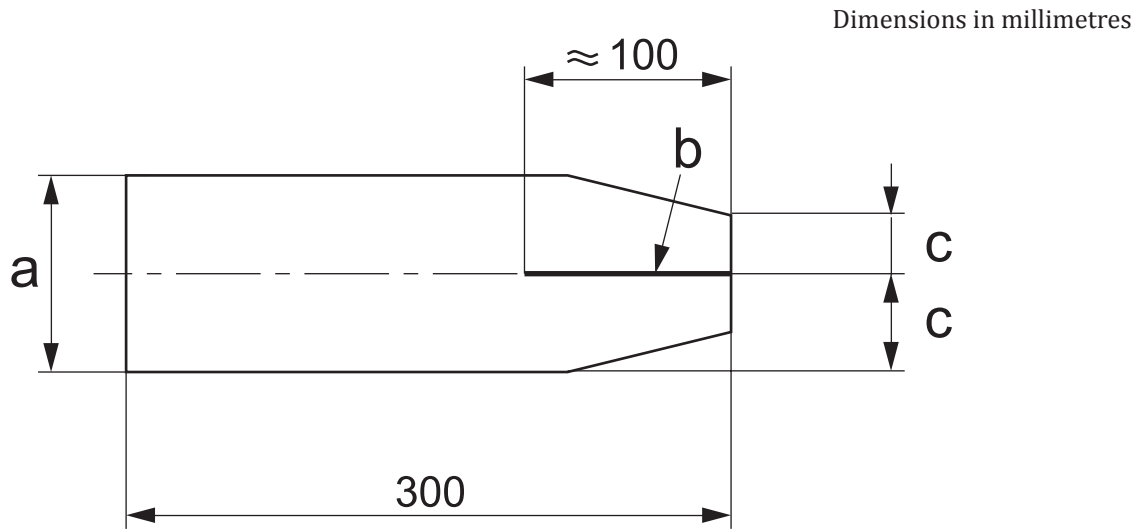


Key

- a without covers
- b 50 or 150 (see 6.2)
- c cut line

Figure 2 — Test pieces without breaker

If necessary, the width of the test piece (cut-edge) may be adjusted to the gripping width of the jaws by tapering the edges symmetrically on a length at most the same as that of the cut (see [Figure 3](#)), with the width at the end of the cut part as great as the width of the jaws permits.



Key

- a 300 or 100 (see [6.2](#))
- b cut line
- c see [6.4](#)

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Figure 3 — Tapered test piece

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7 Method of test

7.1 Conditioning of test pieces

The tests shall start not less than 24 h after manufacturing. This time includes 8 h for conditioning. The conditioning atmosphere shall be one or another of the following:

- temperature (20 ± 2) °C with (65 ± 5) % relative humidity;
- temperature (23 ± 2) °C and (50 ± 5) % relative humidity;
- temperature (27 ± 2) °C and (65 ± 5) % relative humidity.

The tests shall be conducted in the same atmosphere as used for conditioning.

The atmosphere at which the test pieces are conditioned and tested shall be given in the test report.

In the event of dispute, the period of conditioning shall be 72 h.

7.2 Test conditions

The test conditions with regard to temperature and humidity shall be those adopted in [7.1](#).

7.3 Procedure

Mount the two cut ends of the test piece in the jaws of the tensile testing machine either in sense A or in sense B (see [Figure 4](#)), so that the inner edges of the cut are situated at the centre of each jaw.

Fix the speed of separation of the jaws at (50 ± 10) mm/min and continue testing until the tear has extended for at least 100 mm.

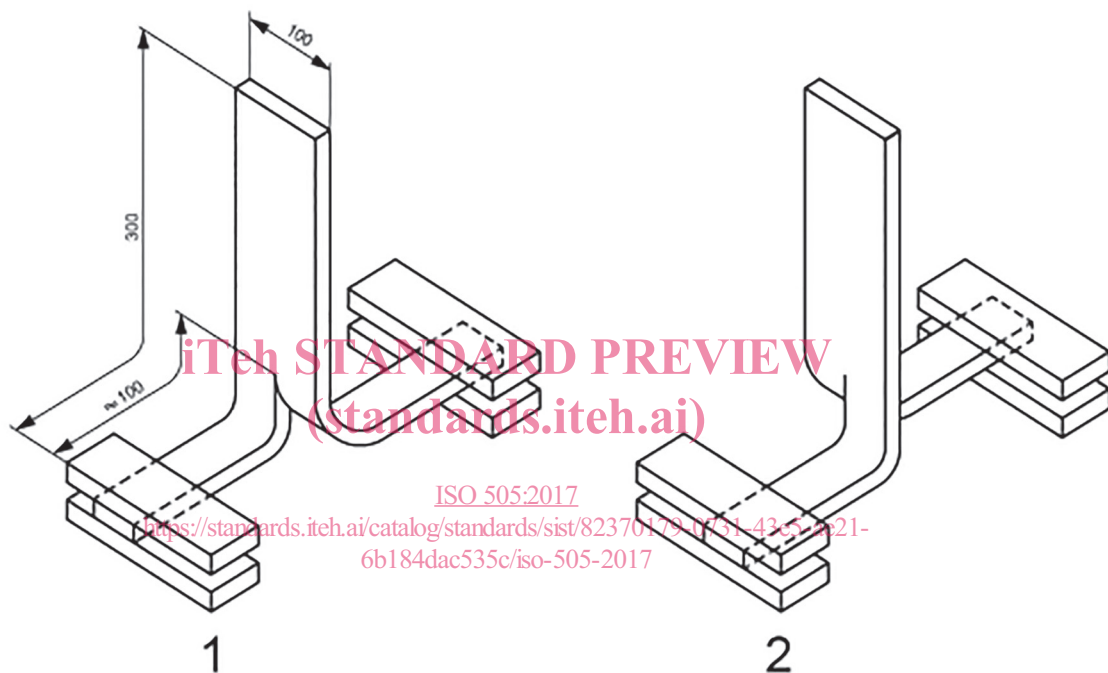
Record the tearing forces over the length of the tear by means of a graphical device.

7.4 Expression of results

Examination and analysis of the multi-peak tear resistance test traces shall be in accordance with ISO 6133. The median peak force is defined as the mean tear resistance.

Indicate the resistance of each test piece separately and then indicate the mean value of the resistance of the two test pieces.

Dimensions in millimetres



Key

- 1 sense A
- 2 sense B

Figure 4 — Mounting of two cut ends of test piece

7.5 Test report

The test report shall make reference to this document and shall include the following:

- a) identification of the belt tested;
- b) the temperature and relative humidity adopted for the conditioning of the test pieces and the tests;
- c) the results expressed in accordance with 7.4;
- d) whether the test was conducted with or without covers;
- e) an account of any test or operating conditions not specified in this document.