INTERNATIONAL STANDARD

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Third edition
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Textile conveyor belts — Full thickness tensile strength, elongation at break and elongation at the reference load — Test method

Courroies transporteuses à carcasse textile — Résistance à la traction, allongement à la rupture et allongement sous force de référence en pleine épaisseur — Méthode d'essai

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 283 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This third edition of ISO 283 cancels and replaces ISO 283-1:2000, of which it constitutes a technical revision. It also incorporates the Technical Corrigendum ISO 283-1:2000/Cor 1:2006.

Textile conveyor belts — Full thickness tensile strength, elongation at break and elongation at the reference load — Test method

1 Scope

This International Standard specifies a test method for the determination of the full thickness tensile strength in the longitudinal direction and the elongation at the reference force and breaking point of conveyor belts having a textile carcass. The method can also be used for the determination of full thickness tensile strength in the transverse direction and the elongation at the breaking point, for use when the manufacturer is requested by the purchaser to state values for these properties.

This International Standard is not suitable or valid for light conveyor belts as described in ISO 21183-1[1].

2 Normative references

The following referenced documents are indispensable for the application 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 7500-1:1999, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

ISO 18573, *Conveyor belts — Test atmospheres and conditioning periods*

EN 10002-2:1991, *Metallic materials — Tensile testing — Part 2: Verification of the force measuring system of the tensile testing machines*

3 Terms and definitions

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

3.1
tensile strength
greatest measured force during the tensile test divided by the width of the test piece, expressed in N/mm

3.2
nominal tensile strength
specified minimum value of the tensile strength, expressed in N/mm

3.3
reference force
reference load
one-tenth of the nominal tensile strength in the longitudinal direction multiplied by the width of the test piece in mm, expressed in newtons

EXAMPLE Nominal tensile strength = 1 600 N/mm

One tenth of the nominal tensile strength = 160 N/mm;

Reference force for 25 mm test piece = 25 mm × 160 N/mm = 4 000 N.

3.4
elongation at break
elongation at the greatest force [load], expressed as the percentage increase in the distance between two reference points

3.5
elongation at the reference force [load]
elongation at the reference force [load] in the longitudinal direction, expressed as the percentage increase in the distance between two reference points

4 Principle

A test piece, cut from the full thickness of the conveyor belt, is extended under specified conditions using a tensile testing machine, until rupture of the test piece occurs.

5 Apparatus

5.1 Tensile testing machine, of CRE or CRT type, calibrated to Grade 1 according to ISO 7500-1:1999 or EN 10002-2:1991, and capable of extending the test piece at a constant rate, without interruption, of (100 ± 10) mm/min.

5.2 Device, such as an extensometer, with a measuring length of at least 100 mm and accurate to within 0,1 mm or better, capable of measuring the elongation of the gauge length marked on the test piece. Use of a device that produces a graphical trace throughout the test is preferred.

5.3 Grips, the form of which should prevent any slippage of the test piece during the tensile test. The use of grips with transverse serrations in accordance with Figure 1 is recommended.

Dimensions in millimetres

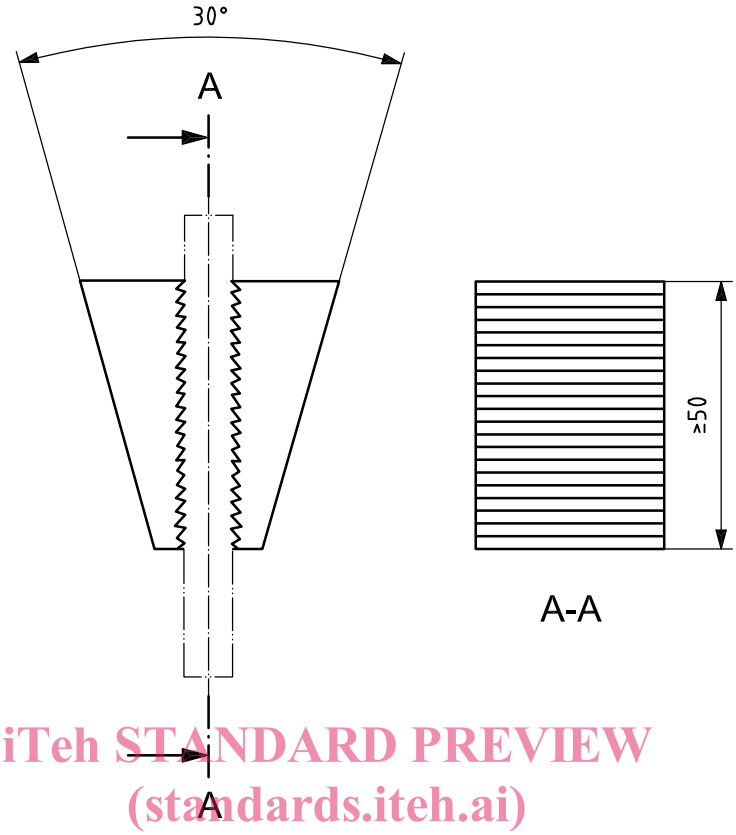


Figure 1 — Grip with transverse serrations

5.4 Die cutter or power saw, either of the dies with wall profiles as shown in Figure 2 being suitable for cutting the test pieces shown in Figures 3, 4 and 5. Other profiles may be used, but the critical feature is that the cut sides of the test piece are perpendicular to the test piece surfaces.

NOTE If rubber covers are to be cut, it is advisable to moisten the die and surface to be cut.

6 Test pieces

6.1 Shape and dimensions

The shape and dimensions of the test piece shall be in accordance with either Figure 3, 4, 5 or 6.

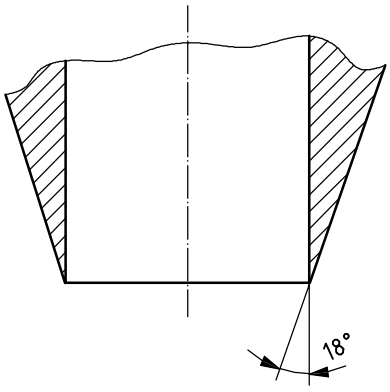
6.2 Method of selection of test pieces

Test pieces shall be selected parallel, or at right angles, to the axis of the belt, and at not less than 50 mm from the edge of the belt. If test pieces are selected from a sample cut from the belt, no test piece shall be cut with its longitudinal edge less than 12 mm from the edge of the sample. In all cases, the cut or sawn sides of the test piece shall be perpendicular to its surface. No test piece shall contain a ply joint.

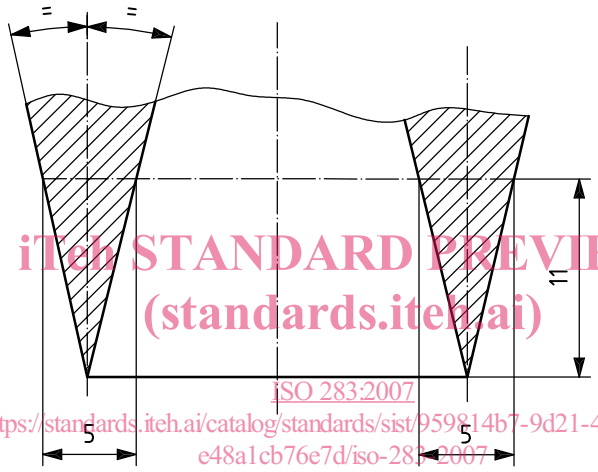
For a test piece of type D, draw the form of the test piece on the surface of the belt or sample and from each edge of the sample cut at five places with a power saw up to the drawn lines (see Figure 6).

The type D test piece illustrated in Figure 6 should be limited to the testing of conveyor belts having tensile strengths greater than 2 000 N/mm.

Dimensions in millimetres



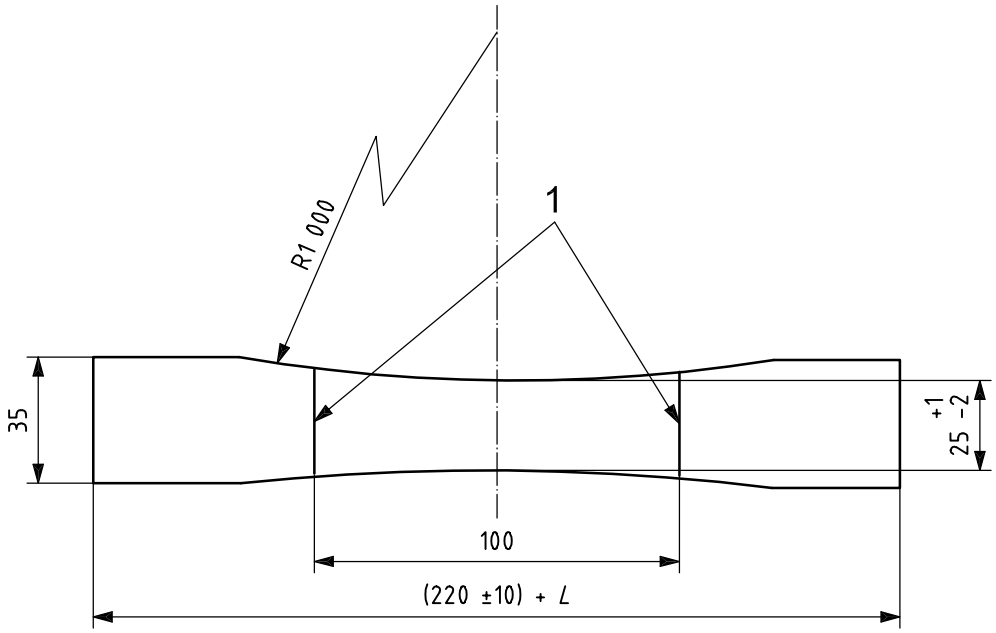
a)



b)

Figure 2 — Suitable die profiles

Dimensions in millimetres



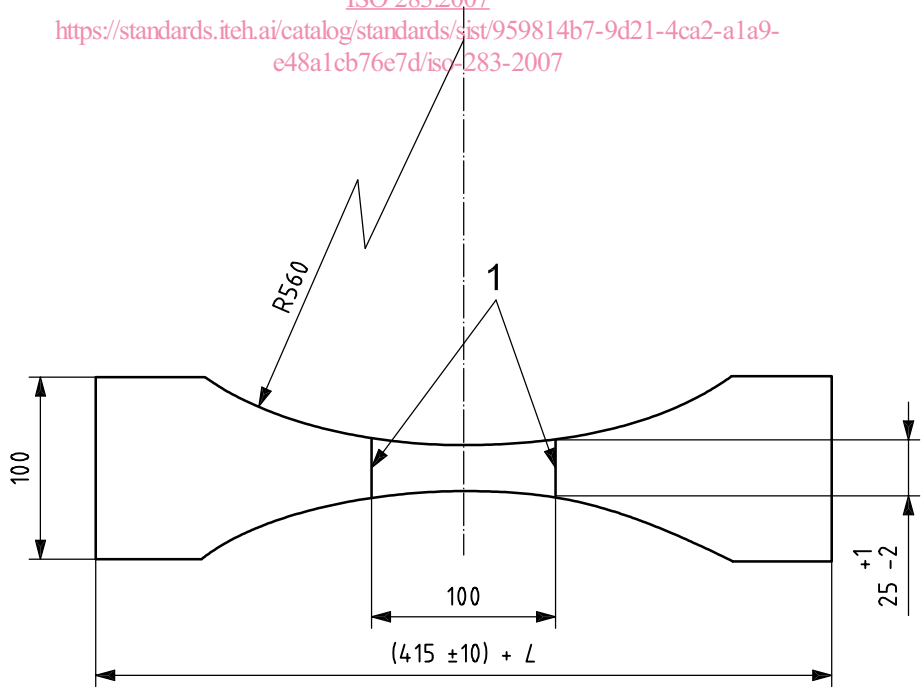
Key

L length of both grips

1 reference lines

Figure 3 — Type A test piece

Dimensions in millimetres



Légende

L length of both grips

1 reference lines

Figure 4 — Type B test piece