
**Steel cord conveyor belts — Methods for
the determination of total thickness and
cover thickness**

*Courroies transporteuses à câbles d'acier — Méthodes de détermination
de l'épaisseur totale de la courroie et de l'épaisseur des revêtements*

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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 3.

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 member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 7590 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 41, *Pulley and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Throughout the text of this standard, read "...this European Standard..." to mean "...this International Standard...".

This fourth edition cancels and replaces the third edition (ISO 7590:1990), which has been technically revised.

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Foreword

The text of EN ISO 7590:2001 has been prepared by Technical Committee CEN/TC 188 "Conveyor belts", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 41 "Pulleys and belts (including veebelts)".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2001, and conflicting national standards shall be withdrawn at the latest by September 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies two methods of measuring the total thickness and the cover thickness of steel cord conveyor belts.

Method A, (Micrometer method) can be used for all steel cord conveyor belts for measurement of both total thickness and cover thickness.

Method B (Optical method) is recommended for the measurement of cover thicknesses only. It is not suitable if there is a textile or metal weft, or if the ends of the steel cords become twisted when cut.

2 Terms and definitions

For the purposes of this European standard the following terms and definitions apply.

2.1

breaker

reinforcement included in the cover

2.2

weft

transverse layer or layers included to reinforce the carcass of the belt and not regarded as part of the cover layer

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3 Principle

The total thickness is measured by micrometer at a number of specified points according to the belt width.

The cover thicknesses can be determined either:

- a) by removing the covers, taking further measurements at the same specified points and calculating each of the cover thicknesses by subtraction, or,
- b) by direct measurement using an optical instrument.

4 Apparatus

4.1 Method A: Dial gauge micrometer, graduated every 0,1 mm with flat feet, a circular foot of 10 mm in diameter and exerting a pressure of (22 ± 5) kPa on the specimen.

4.2 Method B: Optical measuring instrument. The measuring instrument is a hand-held magnifying glass with a scale divided in 0,1 mm steps. The magnification shall be at least 8 times.

5 Procedure

5.1 Test pieces

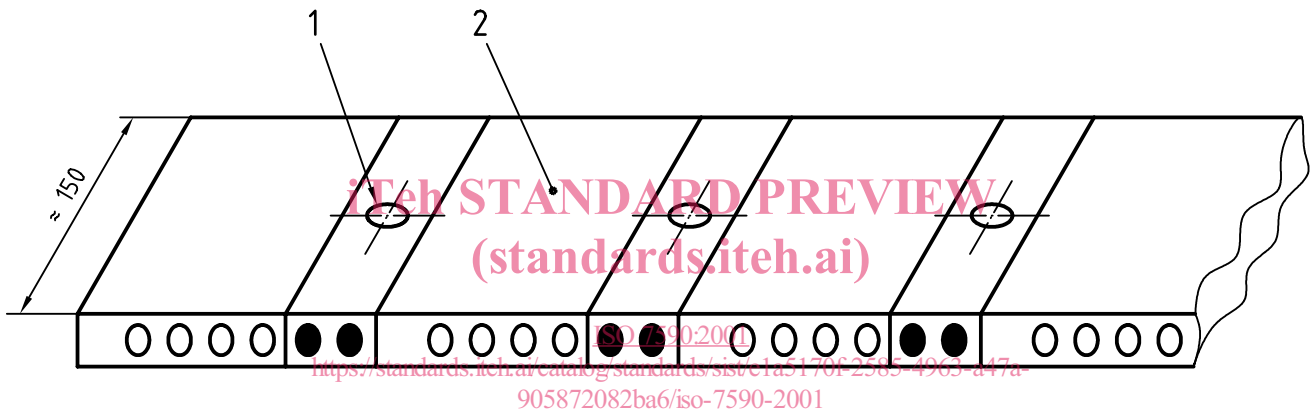
Cut a rectangular test piece across the full belt width at 90° to the belt edge, with the following dimensions;

5.1.1 For method A1, the test piece shall be approximately 150 mm long. Cut three or five specimens at the measurement points as described in 5.2. Each specimen shall be two cord pitches wide, i.e. -

width: equal to the width comprising two cords (see Figure 1)

length : approximately 150 mm;

Dimensions in millimetres



Key

- 1 Measurement point
- 2 Specimen

Figure 1 - Test pieces taken at measurement points cut from full width belt sample

5.1.2 For method A2, the test piece shall be not less than 50 mm long , i.e.

- a) length: approximately 50 mm;
- b) width: equal to total belt width.

Mark on the test piece the measurement points as described in 5.2.

5.1.3 For method B, the test piece shall be not less than 50 mm long , or the test may be performed in situ on the end of a conveyor belt. In either case it is essential that the cut edge of the test piece is at 90° to the surface of the belt and that the cords are clearly visible and free of contamination. If necessary, clean the cord ends. Mark the measurement points as described in 5.2.

5.2 Measurement points

The thickness shall be measured at the following points in both methods:

- a) Belt width: $l \leq 1000$ mm : 3 points (see Figure 2)
- b) Belt width: $l > 1000$ mm : 5 points (see Figure 2)

The measurement points shall be spaced equidistantly over the specimen length (i.e. the belt width).

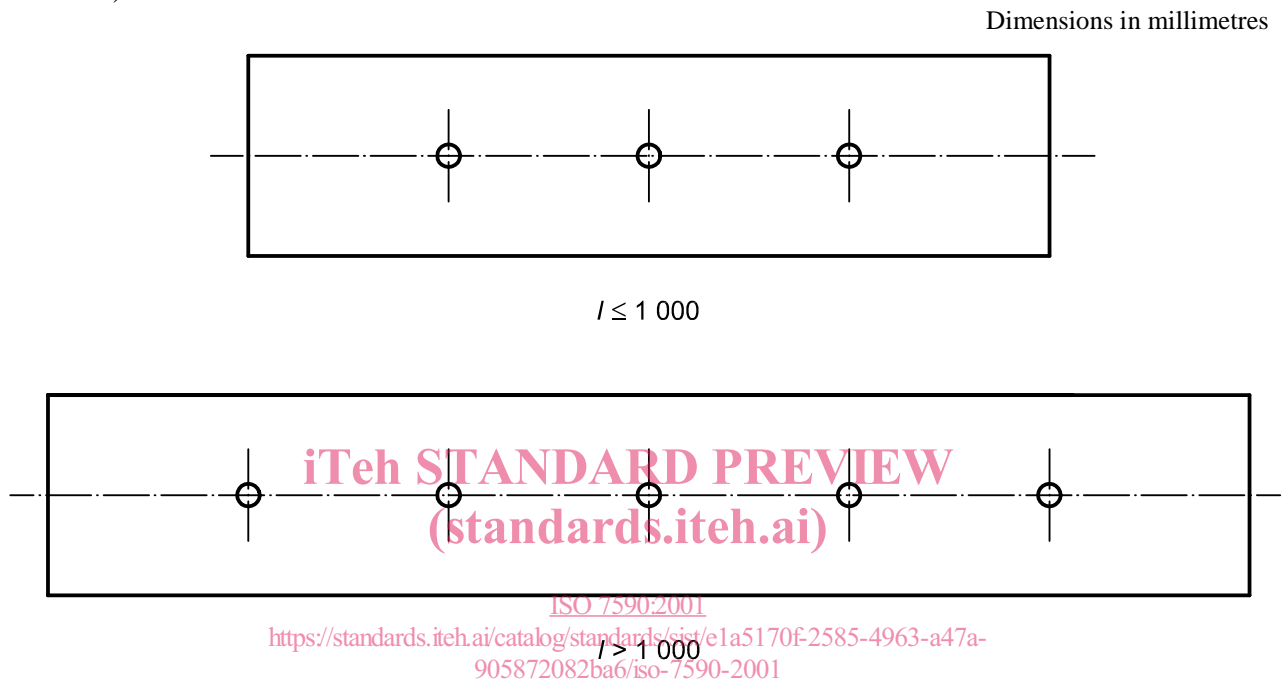


Figure 2 - Location of measurement points

5.3 Measurement of thickness

5.3.1 Method A1

5.3.1.1 Measurement of total thickness

Measure the total thickness d of the specimen at each of the points specified according to the width of the belt (see Figure 2).

5.3.1.2 Measurement of top cover thickness

Remove the top cover down to the two cords, [see Figures 3 a) and 3 b)]. Measure d_1 at the same points as shown in Figure 2. Take measurements directly above the cord, ensuring that the micrometer foot is in contact with the surface of the cord, [see Figure 3 a)] or the surface of the transverse breaker, [see Figure 3 b)].

Calculate the thickness of the top cover (e_1) for each measuring point using the following formula:

$$e_1 = d - d_1$$