
**Steel cord conveyor belts —
Longitudinal traction test —**

**Part 1:
Measurement of elongation**

*Courroies transporteuses à câbles d'acier — Essai de traction dans le
sens longitudinal —*

Partie 1: Mesurage de l'allongement



Reference number
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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Principle	1
4 Apparatus	1
5 Test specimens	2
6 Procedure	2
7 Expression of results	3
8 Test report	3

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 7622-1 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This second edition cancels and replaces the first edition (ISO 7622-1:1984), of which it constitutes a minor revision.

ISO 7622 consists of the following parts, under the general title *Steel cord conveyor belts — Longitudinal traction test*:

- *Part 1: Measurement of elongation*
- *Part 2: Measurement of tensile strength*

Introduction

This test method is intended to verify, by destructive testing, the elongation properties of steel cords constituting the carcass of conveyor belts. As it is a destructive test, it is used only in the event of litigation or where no certificate of compliance is issued by the cord manufacturer.

Differences in elongation can occur between raw steel cords and rubber-coated steel cords. For this reason, the values determined in accordance with this method and the values stated in a certificate of the cord manufacturer can differ.

Steel cord conveyor belts — Longitudinal traction test —

Part 1: Measurement of elongation

1 Scope

This part of ISO 7622 specifies a method for the determination of the elongation of steel cords constituting the carcass of conveyor belts, when subjected to a force corresponding to 10 % and 60 % of the specified tensile strength.

It applies exclusively to conveyor belts with a steel carcass.

NOTE A method for the determination of tensile strength is specified in ISO 7622-2.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Principle

The traction test is carried out on a steel cord, taken from the carcass of the belt. Determination of the elongation is measured using an extensometer, at 10 % and 60 % of the specified tensile strength, by using, for example, a dynamometer, the rate of separation of the jaw of which is specified and maintained constant.

4 Apparatus

4.1 Dynamometric tensile testing machine, complying with the following requirements:

- a) the force exerted by the machine shall be adaptable to the strength of the test specimen;
- b) it shall be possible for the rate of separation of the jaws to be set at 25 mm/min \pm 5 mm/min and be maintained constant;
- c) the separation between the jaws shall be capable of being at least 250 mm.

4.2 Device for holding the test specimen cord, such that it is impossible for the test specimen to slip during the test.

Two fixed grooved pulleys of diameter at least either 50 mm or 10 times the cord diameter, d (see [Figure 1](#)), constituting the upper and lower holding device, can be used, for example.

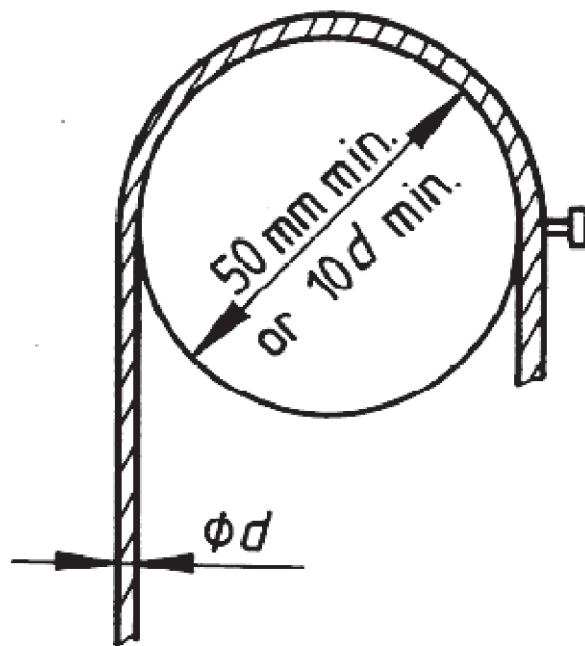


Figure 1 — Device for holding the test specimen cord

4.3 Extensometer, accurate to at least 0,01 %.

As the elongation of steel cords is generally very low, accurate, but sensitive, extensometers, which could be damaged if the test specimen should break, have to be used. For this reason, the measurement is limited to 60 % of the specified tensile strength.

It is preferable that an extensometer be able to accommodate the cord rotation which occurs due to its twisted nature.

4.4 Device for recording the curve of traction force as a function of elongation, if available.

5 Test specimens

Prepare four specimens (two S-twist and two Z-twist) as follows:

- a) take a sample at least 400 mm long from the belt;
- b) using a knife, cut the compound between the layer of cords and the remainder of the belt;
- c) then cut the compound so as to isolate the cords from the central part and extract four cords, taking care not to subject them to any tensile stress;
- d) strip the rubber coating from the whole cord length or at least from the area at the end of each of these cords that is to be placed in the holding device.

6 Procedure

Carry out four tests at least five days after manufacture of the belt.

Unless otherwise specified, in which case note this fact in the report, carry out the test at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and at $50\text{ } \% \pm 5\text{ } \%$ relative humidity in accordance with ISO 18573, Atmosphere B.

Place the ends of the cord on the holding device, as follows:

- a) fix one end on the upper device;
- b) fix the other end on the lower device, and apply an initial tractive force equal to 50 times the linear density (mass per metre) of the cord (this is to define the zero point of the registration curve clearly);
- c) position the two jaws of the extensometer with a separation of between 100 mm and 300 mm.

Start the dynamometer, with the rate of separation of the jaws maintained constant at 25 mm/min \pm 5 mm/min.

Record and note the elongations at 10 % and 60 % of the specified minimum tensile strength of the belt in the number of cords.

7 Expression of results

Express the elongation as a percentage of the initial length.

Take as the result the arithmetic mean value of the four measurements made at 10 % and at 60 % of the specified minimum tensile strength.

Express the result to the nearest 0,1 %.

8 Test report

The test report shall contain the following information:

- a) a reference to this part of ISO 7622, i.e. ISO 7622-1;
- b) the mean values of elongation at 10 % and 60 % of the specified minimum tensile strength, in accordance with [Clause 7](#);
- c) any operating details not specified in this part of ISO 7622, or regarded as optional, together with any incidents likely to have influenced the results.

