International Standard 505

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Conveyor belts — Tear propagation resistance of the carcass — Method of test

Courroies transporteuses — Résistance à la propagation d'une déchirure dans la carcasse — Méthode d'essai

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 505 was developed by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 505-1975), which had been approved by the member bodies of the following countries :

Australia	Greece	South Africa, Rep. of
Austria	India	Spain
Belgium	Israel	Sweden
Chile	Italy	Switzerland
Czechoslovakia	Japan	Turkey
Denmark	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	USA
Finland	New Zealand	USSR
France	Pakistan	Yugoslavia
Germany, F.R.	Portugal	

No member body had expressed disapproval of the document.

Printed in Switzerland

Conveyor belts — Tear propagation resistance of the carcass — Method of test

1 Scope and field of application

This International Standard specifies a method of test for the measurement of the propagation resistance of an initial tear in the carcass of conveyor belts.

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

2 Reference

ISO 471, *Rubber — Standard temperature humidities and times for the conditioning and testing of test pieces.*

3 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 from which the covers have been removed.

4 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 per minute;

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.

5 Test pieces

5.1 Shape and dimensions

Shape : rectangular.

Length : 300 mm.

Width : 100 ± 1 mm.

Thickness : belt thickness, without covers.

5.2 Number

Two test pieces shall be used : one in sense A and one in sense B. (See figure 4.)

5.3 Method of sampling

Test pieces shall be taken from the sample in the longitudinal direction of the belt and at a minimum distance of 10 mm from edges of the belt.

5.4 Preparation

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).

Dimensions in millimetres

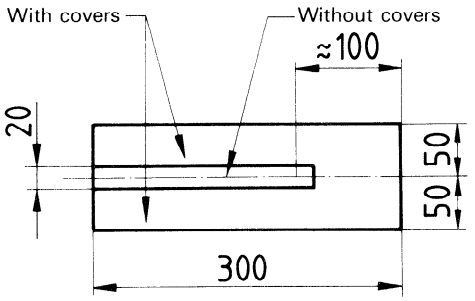

Figure 1 — Test piece with breaker

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

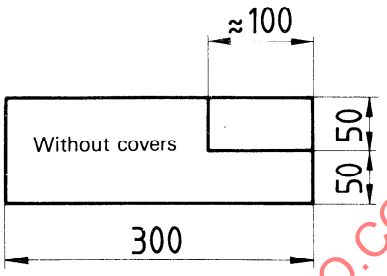

Figure 2 — Test piece without breaker

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, as indicated in figure 3, with the width at the end of the cut part as great as the width of the jaws permits.

Dimensions in millimetres

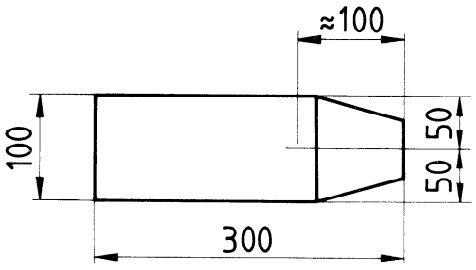

Figure 3 — Tapered test piece

6 Method of test

6.1 Conditioning of test pieces

The test shall be performed on test pieces taken at least 5 days after manufacture.

In the absence of any specification to the contrary, clearly given in the test report, the test pieces shall be conditioned for 3 days under the conditions of temperature and relative humidity defined in ISO 471.

NOTES

1 Select the following conditions by preference :

— temperature : 23 ± 2 °C

— relative humidity : (50 ± 5) %

2 In the case of belts with a textile carcass, the test results of which can be affected by the humidity, a temperature of 20 ± 2 °C and a relative humidity of (65 ± 5) % may be selected, by agreement between the parties, provided that this is clearly indicated in the test report.

3 In the special case of tropical conditions, refer to ISO 471 [27 ± 2 °C, (65 ± 5) %].

In the event of dispute, the conditioning period shall be increased to at least 14 days (with the same temperature and humidity conditions). The exact value of this period may be specified by agreement between the interested parties.

6.2 Test conditions

The test conditions with regard to temperature and humidity shall be those adopted in 6.1.

6.3 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 as indicated in 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 per minute and continue testing until the tear has extended for at least 100 mm.

Note the mean tearing force by means of the graphical recording device over the length of the curve corresponding to at least a 75 mm tear.

6.4 Expression of results

The tear resistance of a test piece is expressed as the mean tearing force recorded during the test.

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

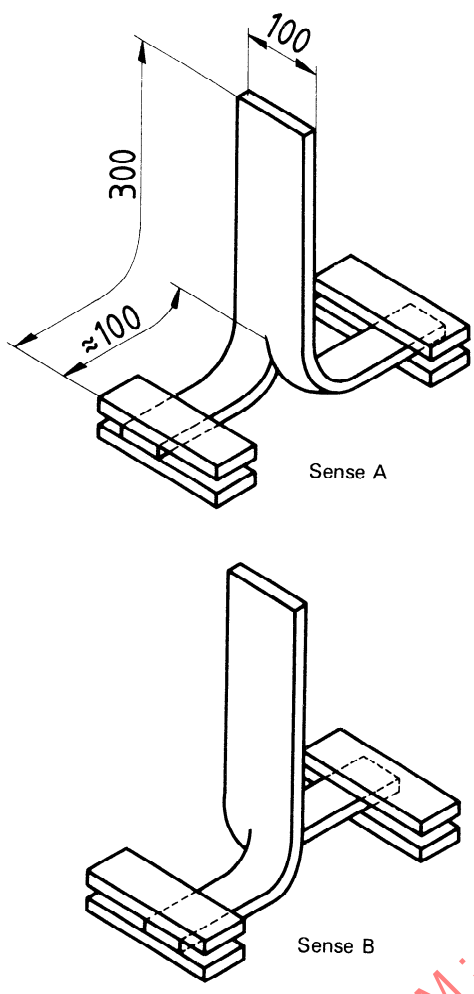

Figure 4 — Mounting of the two cut ends of the test piece

6.5 Test report

The test report shall make reference to this International Standard and shall include :

a) the identification of the belt tested;

b) conditions of temperature and relative humidity adopted for the conditioning of the test pieces and the tests;

c) the results expressed in accordance with sub-clause 6.4 and the way in which tearing occured (if weft threads have been pulled out without any characteristic tear, this is considered a tear);

d) an account of any test or operating conditions not specified in this International Standard.

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