International Standard 7623

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Steel cord conveyor belts — Cord-to-coating bond test

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Foreword

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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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7623 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

Steel cord conveyor belts — Cord-to-coating bond test

1 Scope and field of application

This International Standard specifies a test method for determining the bond strength of metal cords to their surrounding coating.

It applies exclusively to metal carcass conveyor belts.

2 References

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

ISO 7622/1, *Steel cord conveyor belts — Longitudinal tensile testing — Part 1: Measurement of elongation.*

ISO 7622/2, *Steel cord conveyor belts — Longitudinal tensile testing — Part 2: Measurement of tensile strength.*

3 Principle

Measurement of the force required to tear one of the steel warp cords out of the carcass by applying tensile stress along the axis of the cord.

4 Apparatus

Dynamometric tensile testing machine with jaws, in accordance with that described in ISO 7622/2.

5 Specimens

Take three specimens of the following dimensions:

a) length (in the longitudinal direction of the belt): 450 mm min.;

b) width: such that the specimen contains five warp cords;

c) thickness: thickness of the belt including both covers.

In the centre of the specimen, trace the limits of the test length L, such that:

— $L = L_1 = 50 \pm 2$ mm for belts with nominal tensile strength < 1600 N/mm;

— $L = L_2 = 100 \pm 2$ mm for belts with nominal tensile strength $\geqslant 1600$ N/mm.

Using a knife, remove the cover and weft, if any, along at least 10 mm on either side of the test length L, so that the five warp cords are laid bare on both sides.

On one side, cut the centre cord as close as possible to the test area (see the figure).

On the other side, cut the four cords on either side of the centre cord, as close as possible to the test area (see the figure).

With a knife, detach the coating at the ends of the cut cords.

Take care not to damage the cord to be bond-tested.

6 Procedure

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

Unless specified to the contrary, and cited in the test report, carry out the tests at 23 ± 2 °C and at 50 ± 5 % relative humidity.

Set the distance between the jaws at 250 ± 10 mm.

Place the ends of the specimens between the jaws and, for jaws with self-tightening wedges, check that the various parts of these jaws move freely and smoothly.

Apply a continuous tensile stress to the specimen (with no pauses) at a speed of 100 ± 10 mm/min.

Maintain the tractive force until the steel cable is completely torn out.

Note the highest tractive force which is defined as the tear-out force.

Dimensions in millimetres

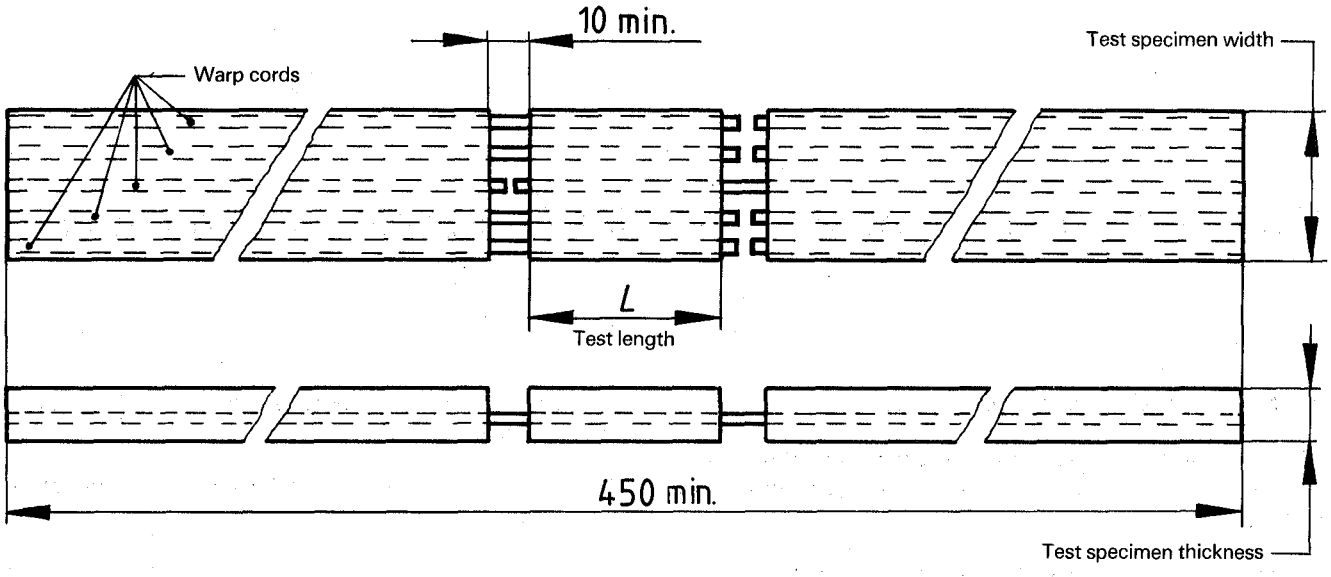

Figure — Specimen for the bond test of the steel cord to its coating

7 Expression of results

Calculate the arithmetical mean value of the tear-out force expressed in newtons of the three specimens tested, i.e.:

$$F = \frac{F_1 + F_2 + F_3}{3}$$

The cord-to-coating bond strength A is expressed in newtons per millimetre by the formula

$$A = \frac{F}{L}$$

where L is the test length expressed in millimetres.

8 Test report

The test report shall contain the following information:

a) reference to this International Standard;

b) identification of the belt tested;

c) cord-to-coating bond strength, expressed as indicated in clause 7;

d) test temperature if other than 23 °C, and test relative humidity if other than 50 %.