International Standard 283

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Full thickness tensile strength and elongation of conveyor belts — Specifications and method of test

Résistance et allongement par traction des courroies transporteuses en pleine épaisseur — Spécifications et 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 283 was developed by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

It results from the combination into one single document of ISO Recommendation R 283-1962 and its Amendment 1-1972, which it cancels and replaces, and was submitted directly to ISO Council for acceptance, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO.

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No member body expressed disapproval of the document.

Full thickness tensile strength and elongation of conveyor belts — Specifications and method of test

0 Introduction

The studies which led to the first edition of ISO/R 283 showed that the highest strength values were obtained from test pieces of a rectangular shape. However, this shape was not adopted because it leads to frequent breakages at the edges of the test piece or in the grips.

It was shown that breakages in the grips were avoided by using a waisted test piece. It was also apparent that the highest values were obtained when the test piece had the greatest possible radius of curvature (for a rectangular test piece the radius of curvature is infinite). The type of test piece which was recommended (hereafter called "type A"), with its 1 000 mm radius of curvature, resulted from these observations.

The same observations are valid in the case of high strength belts, but the gripping force permitted by the 35 mm ends of the type A test piece is generally inadequate to prevent slipping in the grips.

The best shape of test piece is one which :

— provides a large gripping area (test piece with a wide end);

— allows a high ratio of gripping force to tensile strength;

— has the largest possible radius of curvature.

The test pieces described herein for belts having a strength greater than 1 000 N/mm have been agreed as a compromise to meet the above requirements.

1 Scope and field of application

This International Standard lays down the conditions for full thickness tensile strength testing of conveyor belts, and also the corresponding specifications (breaking strength and elongation, elongation under reference load).

It applies to both "surface" and "underground" belts.

2 Specifications

2.1 Breaking strength

The minimum values of full thickness breaking strength in the longitudinal (warp) and the transverse (weft) directions are given in the table below in force units and referred to the unit of the width of the test piece.

Minimum values	
longitudinal direction[1)]	transverse direction
N/mm	N/mm
160	63
200	80
250	100
315	125
400	160
500	free
630	free
800	free

1) The value of the breaking strength of a belt in the longitudinal direction is included in the standard designation for that belt.

NOTES

1 The values shown in the table above belong to the R10 series of preferred numbers, in accordance with ISO 3, *Preferred numbers — Series of preferred numbers*.

2 The table of values for strength in the longitudinal directions may be extended in both directions by using preferred numbers from the R10 series downward or upward :

125, 100, etc.

1 000, 1 250, etc.

3 The table of values for strength in the transverse direction may be extended downward by using preferred numbers of the R10 series in that direction :

50, 40, etc.

On the other hand, transverse strength remains open for belting of 800 N/mm and over (in the longitudinal direction).

2.2 Elongations in the longitudinal direction

The values shown below are given unless otherwise specified (this may occur in particular for single ply belts, metal belts and certain belts of very great length) :

Elongation under reference load[1)] 4 % max.

Breaking elongation 10 % min.

1) "Reference load" signifies the tensile stress equal to 10 % of the minimum strength specified in the table in 2.1 (longitudinal direction).

3 Method of test

3.1 Principle

A test piece cut from the full thickness of the belt is tensile tested until it breaks.

3.2 Apparatus

The apparatus consists of the following :

3.2.1 Dynamometer, the dynamometer load should be suitable for the strength of the test piece.

3.2.2 Grips, the form of the grips should ensure perfect fixing of the test piece and eliminate any possibility of slip during the tensile test. The use of grips with transverse serrations in accordance with figure 1 is recommended. For very thick belts, the use of double compartment grips of the type shown in figure 2 is permitted.

3.3 Test pieces

3.3.1 Shape and dimensions

The shape and dimensions of the test piece shall be in accordance with either figures 3, 4 or 5 which are alternatives and chosen by the supplier.

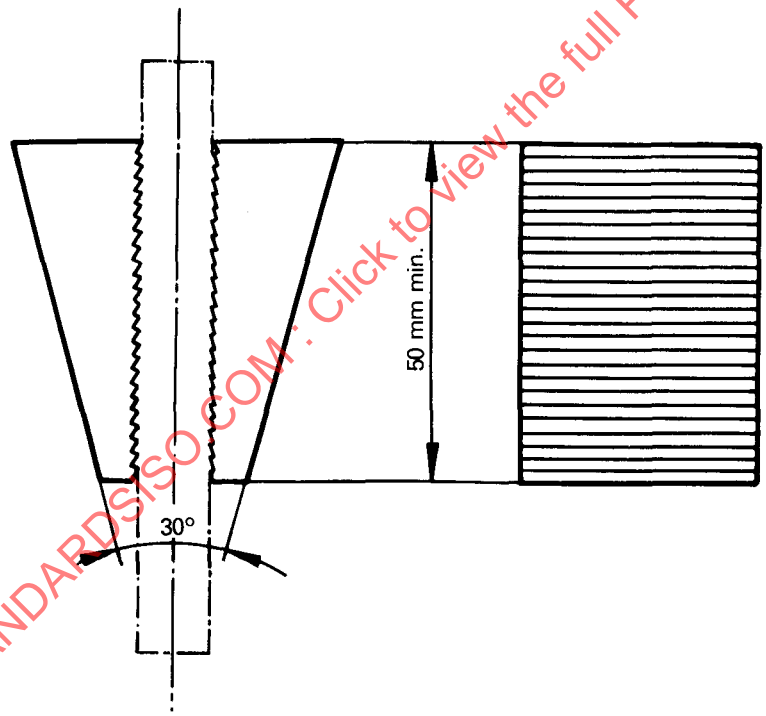

Figure 1

Dimensions in millimetres

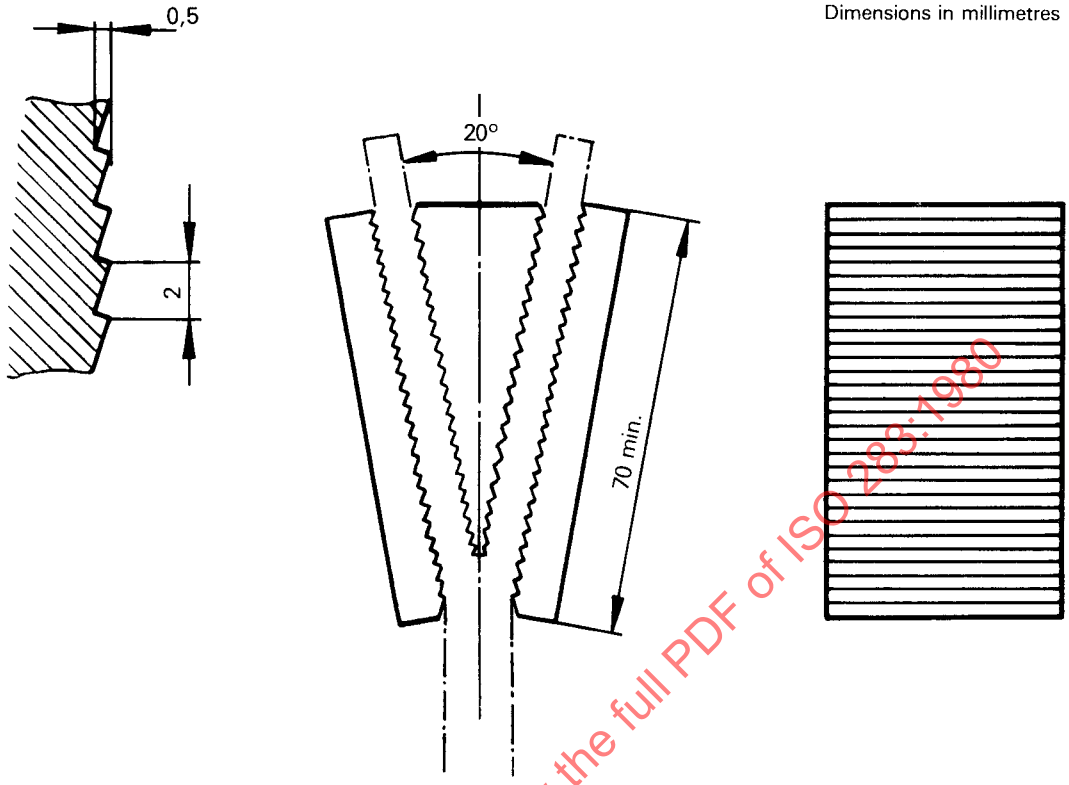

Figure 2

Dimensions in millimetres

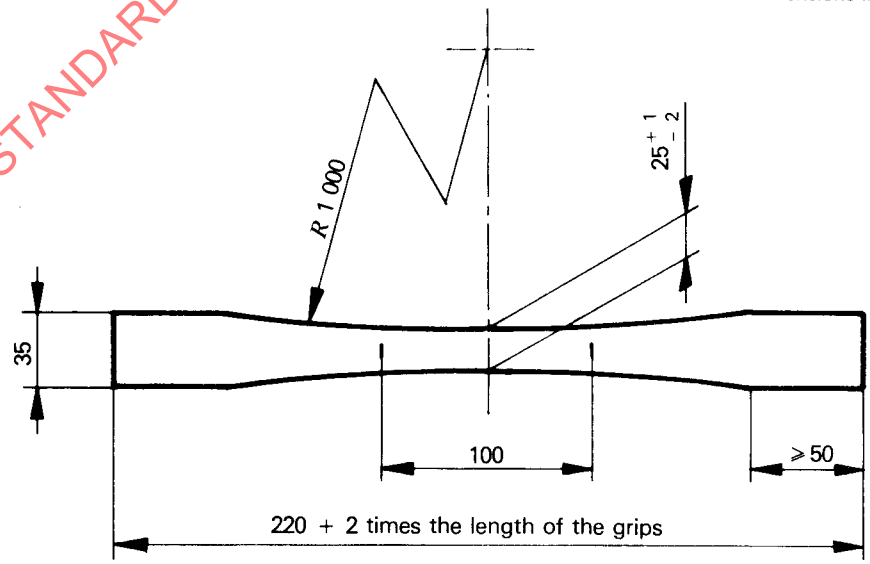

Figure 3 — Type A test piece

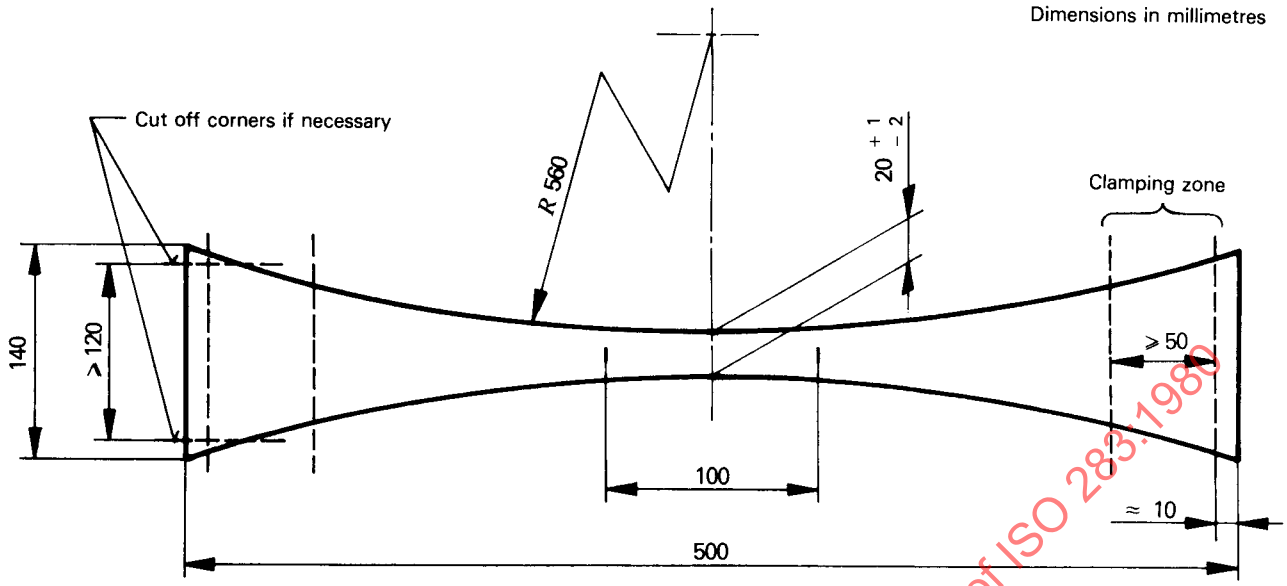

Figure 4 — Type B test piece

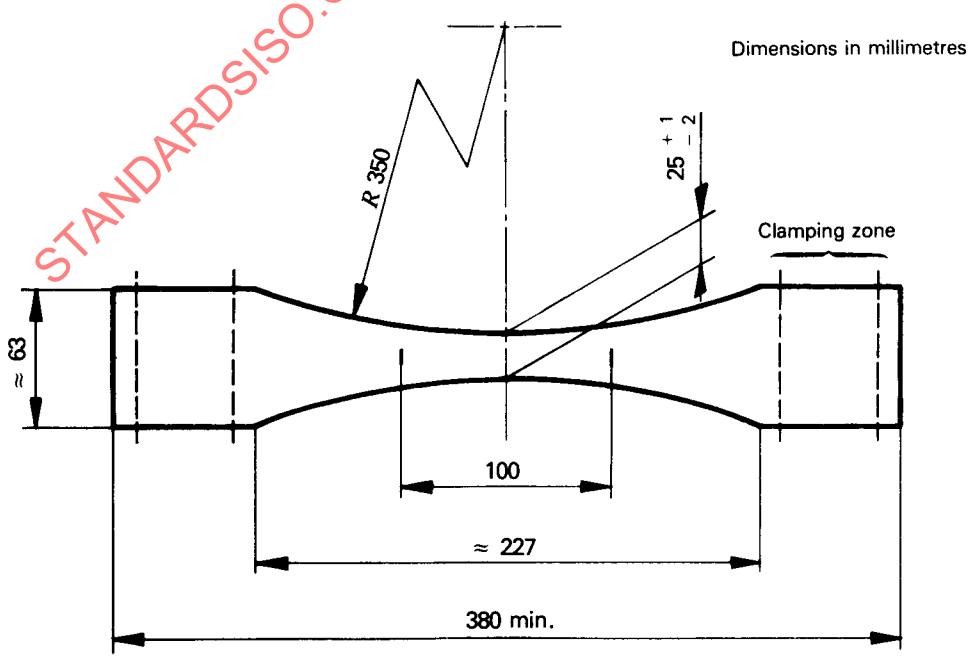

Figure 5 — Type C test piece