
**Conveyor belts — Indentation rolling
resistance related to belt width —
Requirements and testing**

*Courroies transporteuses — Résistance au roulement par suite
d'enfoncement relative à la largeur de courroie — Exigences et essais*



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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including vee belts)*, Subcommittee SC 3, *Conveyor belts*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The indentation rolling resistance is caused by the energy loss connected to the deformation of the conveyor belt due to its contact with the idler. Apart from the technological properties of the conveyor belt, the magnitude of the indentation rolling resistance depends on the following factors:

- design of the conveyor belt, especially the pulley side cover plate thickness;
- vertical load;
- idler diameter;
- ambient temperature;
- belt speed.

The width-related indentation rolling resistance is measured in a test rig with an idler which exerts an evenly distributed vertical force on the belt. An indentation rolling resistance to be used for the design of belt conveyors for an idler station with more than one idler can only be calculated considering the vertical forces and their distribution between belt and idler (refer to [Annex A](#)).

Conveyor belts — Indentation rolling resistance related to belt width — Requirements and testing

1 Scope

This document defines a method for the determination of the width-related indentation rolling resistance of conveyor belts. The goal is to be a full-scale test and simulation on finished belt constructions which are reproducible and relevant for the practical use. The test results can be used for a comparison of conveyor belts and for design of belt conveyors with steel cord and fabric conveyor belts.

This document is not suitable or valid for light conveyor belts described in ISO 21183-1.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Symbols and units

[Table 1](#) shows the symbols and units used in this document.

Table 1 — Symbols and units

Symbol	Meaning	Unit
B	Belt width	mm
b_K	Width of the rubber edge of the belt	mm
b_R	Length of the contact line between belt and idler shell	mm
c_a	Factor in the approximation equation for the width related indentation rolling resistance	-
c_b	Exponent in the approximation equation for the width related indentation rolling resistance	-
$D_{R,M}$	Diameter of measuring idler	mm
$D_{R,G}$	Diameter of the opposing idler	mm
D_S	Steel cord diameter	mm
D_{Tr}	Pulley diameter	mm
F_E	Indentation rolling resistance acting on one idler	N
$F_{E,ges}$	Total indentation rolling resistance acting on an idler station with three idlers	N
F'_E	Indentation rolling resistance related to belt width	N/mm