

Light conveyor belts — Determination of electrical resistances

The European Standard EN ISO 21178:2006 has the status of a
British Standard

ICS 53.040.10

National foreword

This British Standard was published by BSI. It is the UK implementation of EN ISO 21178:2006. It is identical with ISO 21178:2005. It supersedes BS EN 1637:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/67, Conveyor belts.

A list of organizations represented on PRI/67 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 29 December 2006

© BSI 2006

ISBN 0 580 49809 3

Amendments issued since publication

Amd. No.	Date	Comments

English Version

Light conveyor belts - Determination of electrical resistances
(ISO 21178:2005)

Courroies transporteuses légères - Détermination des
résistances électriques (ISO 21178:2005)

Leichte Föbergurte - Bestimmung der elektrischen
Widerstände (ISO 21178:2005)

This European Standard was approved by CEN on 21 October 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of ISO 21178:2005 has been prepared by Technical Committee ISO/TC 41 "Pulleys and belts (including veebelts)" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 21178:2006 by Technical Committee CEN/TC 188 "Conveyor belts", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2007, and conflicting national standards shall be withdrawn at the latest by May 2007.

This document supersedes EN 1637:1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 21178:2005 has been approved by CEN as EN ISO 21178:2006 without any modifications.

INTERNATIONAL STANDARD

ISO
21178

First edition
2005-11-01

Light conveyor belts — Determination of electrical resistances

*Courroies transporteuses légères — Détermination des résistances
électriques*



Reference number
ISO 21178:2005(E)



Documents

Document Sharing Hub

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Symbols	1
4 Electrical surface resistances	2
4.1 Method A: measurement of surface resistance R_{OA} omni-directionally	2
4.2 Method B: measurement of surface resistance R_{OB} in longitudinal and transverse direction	5
5 Electrical surface resistivity ρ_S	7
5.1 General	7
5.2 Principle	7
5.3 Apparatus	7
5.4 Preparation and preservation of test pieces prior to testing	9
5.5 Procedure	9
5.6 Expression of results	9
5.7 Test report	10
6 Electrical volume resistances	10
6.1 Volume resistance R_D perpendicular to plane of belt.....	10
6.2 Volume resistance R_{Di} in longitudinal and transverse direction parallel to plane of belt	14
7 Electrical volume resistivity ρ_D	17
7.1 Procedure	17
7.2 Expression of results	17
7.3 Test report	17
Annex A (informative) Comparative values for electrical resistances.....	18

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 21178 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This International Standard is based on EN 1637:1999, prepared by CEN/TC 188.

Light conveyor belts — Determination of electrical resistances

1 Scope

This International Standard specifies test methods for determining the electrical resistances of light conveyor belts according to ISO 21183-1. The resistances are surface resistance, volume resistance perpendicular to the belt plane, and longitudinal and transverse volume resistance parallel to the belt plane. This International Standard also specifies two test methods for determining the surface resistivity and the volume resistivity.

2 Normative references

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

ISO 18573:2003, *Conveyor belts — Test atmospheres and conditioning periods*

ISO 21183-1, *Light conveyor belts — Part 1: Principal characteristics and applications*

3 Symbols

Symbol	Quantity	Unit
R_{OA}	Electrical surface resistance, method A	Ω
R_{OB}	Electrical surface resistance, method B	Ω
R_{OG}	Electrical surface resistance for the determination of ρ_s	Ω
R_D	Electrical volume resistance perpendicular to the plane of the belt	Ω
R_{Di}	Electrical volume resistance in longitudinal and transverse direction parallel to the plane of the belt	Ω
$\rho_s^{1)}$	Electrical surface resistivity	Ω
ρ_D	Electrical volume resistivity	$\Omega \cdot \text{cm}$
$d_{1/2/3}$	Diameter of electrode	cm
d_m	Middle of the gap diameter	cm
g	Width of the gap	cm
A	Surface of the electrode	cm^2
h	Thickness of test piece	cm

1) The SI unit of surface resistivity is the ohm (Ω). In practice this is sometimes referred to as “ohm/square” or “ Ω/sq ” or “ $\Omega/\square$ ”. The size of the square is immaterial.