



SLOVENSKI STANDARD SIST EN ISO 21178:2013

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Nadomešča:

SIST EN ISO 21178:2007

**Naprave za kontinuirni transport - Lahki trakovi tračnih transporterjev -
Ugotavljanje električnih upornosti (ISO 21178:2013)**

Light conveyor belts - Determination of electrical resistances (ISO 21178:2013)

iTeh STANDARD PREVIEW

Courroies transporteuses légères - Détermination des résistances électriques (ISO 21178:2013)

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53.040.20	Deli za transporterje	Components for conveyors

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EN ISO 21178

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English Version

Light conveyor belts - Determination of electrical resistances
(ISO 21178:2013)

Courroies transporteuses légères - Détermination des
résistances électriques (ISO 21178:2013)

This European Standard was approved by CEN on 4 March 2013.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN ISO 21178:2013) has been prepared by Technical Committee ISO/TC 41 "Pulleys and belts (including veebelts)" in collaboration with Technical Committee CEN/TC 188 "Conveyor belts" the secretariat of which is held by SNV.

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of an identical text or by endorsement, at the latest by October 2013, and conflicting national standards shall be withdrawn at the latest by October 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 21178:2006.

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

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The text of ISO 21178:2013 has been approved by CEN as EN ISO 21178:2013 without any modification.

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INTERNATIONAL STANDARD

**ISO
21178**

Second edition
2013-03-15

Light conveyor belts — Determination of electrical resistances

*Courroies transporteuses légères — Détermination des résistances
électriques*

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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 second edition cancels and replaces the first edition (ISO 21178:2005), of which it constitutes a minor revision.

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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 documents, in whole or in part, are normatively referenced in this document and are indispensable to its application. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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
ρ_s	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

NOTE The SI unit of surface resistivity, ρ_s , is the ohm (Ω). In practice, this is sometimes referred to as "ohm/square" or " Ω/sq " or " Ω/\square ". The size of the square is immaterial.

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4 Electrical surface resistances

4.1 Method A: measurement of surface resistance R_{OA} omni-directionally

4.1.1 Applicability

This method is applicable to belts which are electrically two-dimensionally isotropic in the plane of the belt.

4.1.2 Principle

An electric current of specified voltage is passed via electrodes through a suitably prepared test piece taken from the belt.

4.1.3 Apparatus

4.1.3.1 Sheet of insulating material, a little larger than the test piece

4.1.3.2 Two cylindrical and coaxial brass electrodes, the base of one being circular and that of the other annular. The dimensions and masses are given in [Figure 2](#). The bases of these electrodes shall be machined flat and polished.

4.1.3.3 Flexible insulated wire, connected to each electrode.

4.1.3.4 Ohmmeter, having a measuring range up to $10^{10} \Omega$ and accurate to within $\pm 5 \%$.

4.1.3.5 Source of direct current, adjustable up to 500 V, and not permitting a current greater than 10 mA.

NOTE The source of current can be either an accumulator or a rectified, stabilized a.c. power supply.

4.1.4 Test piece

4.1.4.1 Material

Test piece material shall be new, unused ("virgin"), but shall not be tested sooner than five days after manufacture. It shall be free from contamination and superficial damage.

4.1.4.2 Dimensions

The test pieces shall be square, 300 mm \times 300 mm minimum, and shall be cut from the full thickness of the belt.

4.1.4.3 Number

Three test pieces shall be taken. One test piece shall be taken from the middle of the belt, the other two test pieces shall be taken 100 mm from each of the belt edges.

4.1.4.4 Cleaning

If necessary, clean both surfaces of the test pieces by rubbing with fuller's earth (hydrated magnesium-aluminium silicate), for example, using a clean cloth. After cleaning away all traces of the powder, wipe the surface with a clean cloth moistened with distilled water and then dry with a clean cloth.