



SLOVENSKI STANDARD
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Naprave za kontinuirni transport - Trakovi tračnih transporterjev za podzemno vgradnjo - Električne in požarnovarnostne zahteve

Conveyor belts for use in underground installations - Electrical and flammability safety requirements

Fördergurte für die Verwendung unter Tage - Elektrische und brandtechnische Sicherheitsanforderungen

Courroies transporteuses pour usage dans les installations souterraines - Exigences de sécurité électrique et de protection contre l'inflammabilité

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13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
53.040.20	Deli za transporterje	Components for conveyors

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Conveyor belts for use in underground installations - Electrical and flammability safety requirements

Courroies transporteuses pour usage dans les
installations souterraines - Prescriptions de sécurité
électrique et protection contre l'inflammation

Fördergurte für die Verwendung unter Tage -
Elektrische und brandtechnische
Sicherheitsanforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 188.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prEN 14973:2024 (E)**European foreword**

This document (prEN 14973:2024) has been prepared by Technical Committee CEN/TC 188 “Conveyor belts”, the secretariat of which is held by SNV.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 14973:2015.

Significant technical changes between this document and the previous edition of this European Standard:

- The EN 1554 standard has been replaced by EN ISO 20238:2019. The corresponding technical revisions have been made.
- A new Clause 10 “ 10 Test reports for conveyor belts used in underground installations” has been added. The definition of the construction series has been revised and described in details.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, Annex ZB and Annex ZC, which are an integral part of this document.

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Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

The approach taken in this European Standard is to identify the main hazards encountered in underground conveying applications and to specify requirements for conveyor belts that will provide the necessary operational safety. Three Classes are specified, A, B and C, as defined in 3.9 to 3.11.

NOTE According to national authorities Class C (C1/C2) conveyor belts are requested for use in EU coal mining.

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prEN 14973:2024 (E)

1 Scope

This document specifies electrical and flammability safety requirements for conveyor belts intended for use in underground installations, in the presence of flammable or non-flammable atmospheres.

Conveyor belts covered by this document and intended for use in flammable atmospheres are intended for use on conveyor belt installations (machinery in mines). The belt is a component or part of equipment, which can be incorporated into the conveyor, which is an equipment of Group I, Category M2, as defined in 3.2.2 of EN ISO 80079-36:2016.

This document is not applicable to light conveyor belts as described in EN ISO 21183-1:2006 nor is it applicable to conveyor belts which are manufactured before the date of publication of this document by CEN.

This document deals with those significant hazards detailed in A.1.

Attention is drawn to Annexes ZA and ZB.

NOTE A summary of the requirements of this document is given in Table 2. This is intended for quick reference only.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 12881-1:2014, *Conveyor belts — Fire simulation flammability testing — Part 1: Propane burner tests*

EN 12881-2:2005+A1:2008, *Conveyor belts — Fire simulation flammability testing — Part 2: Large scale fire test*

EN ISO 284:2012, *Conveyor belts — Electrical conductivity — Specification and test method (ISO 284:2012)*

EN ISO 340:2022, *Conveyor belts — Laboratory scale flammability characteristics — Requirements and test method (ISO 340:2022)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 15236-3:2017, *Steel cord conveyor belts — Part 3: Special safety requirements for belts for use in underground installations (ISO 15236-3:2017)*

EN ISO 20238:2019, *Conveyor belts — Drum friction testing (ISO 20238:2018)*

EN ISO 22721:2023, *Conveyor belts — Specification for rubber- or plastics-covered conveyor belts of textile construction for underground mining (ISO 22721:2023)*

EN ISO 80079-36:2016, *Explosive atmospheres — Part 36: Non-electrical equipment for explosive atmospheres — Basic method and requirements (ISO 80079-36:2016)*

EN IEC 31010:2019, *Risk management — Risk assessment techniques (IEC 31010:2019)*

ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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/>

3.1

afterflame

flame which persists after the ignition source has been removed

[SOURCE: EN ISO 13943:2023, definition 3.12]

3.2

afterglow

persistence of glowing, after cessation of flaming or, if no flaming occurs, after the ignition source has been removed

3.3

flame (noun)

zone of combustion in the gaseous phase usually with emission of light

3.4

flame (verb)

undergo combustion in the gaseous phase with emission of light

3.5

glowing, noun

made luminous by heat (without flame)

3.6

undamaged

that part of a conveyor belt remaining after the termination of the fire tests described in EN 12881-1:2014 and which shows no evidence of embrittlement, cracking, blistering or other blemishes not originally present

3.7

secondary safety device

equipment or apparatus provided for the purpose of assisting in the provision of a safe working environment, e.g. slip detectors, heat detectors, water fire extinguishing systems

3.8

incomplete ignition

situation in which the part of the conveyor belt above the burner burns only on the bottom side and not on the top side when the burner is removed

3.9

class A belt

conveyor belt intended for general use where the only hazard is limited access and means of escape

prEN 14973:2024 (E)**3.10****class B belt**

conveyor belt intended for use where there is limited access and means of escape, where a potentially explosive atmosphere is present and where secondary safety devices are either not present (Class B1) or present (Class B2)

3.11**class C belt**

conveyor belt intended for use where there is limited access and means of escape, where a potentially explosive atmosphere is present, where other combustible material or dust is either being conveyed or is a potential source of additional fuel (fire load) and where secondary safety devices are either not present (Class C1) or present (Class C2)

3.12**additional fuel source (fire load)**

material, e.g. wooden linings or plastic pipes, significantly additional to the conveyor belt and conveyed material which it is considered likely would contribute to the ignition source of the conveyor belt in a fire situation

3.13**potentially explosive atmosphere**

atmosphere which could become explosive due to local and operational conditions

4 Ignition hazard assessment

In order to determine which class of conveyor belt has to be used in an underground installation, the operating company shall carry out an ignition hazard assessment. The result of such an assessment shall lead to a class of conveyor belt according to this document. Annex A of this document and Annex A of EN ISO/IEC 80079-38:2016 serve as aids for preparing such an ignition hazard assessment.

NOTE An example of an ignition hazard assessment for a conveyor belt intended for use in a potentially explosive atmosphere is given in Annex B.

5 Electrical resistance

When tested in accordance with EN ISO 284:2012, conveyor belts intended for use in underground installations shall have an electrical surface resistance not greater than 300 M Ω .

6 Frictional heating**6.1 Conveyor belts intended for general use in underground installations (Class A), and for use in hazardous installations where secondary safety devices are present (Classes B2 and C2)**

When tested according to EN ISO 20238:2019, method B2.1, conveyor belts intended for general underground use shall not show any flames, while glowing is permitted. No requirements are given for the maximum temperature of the drum.

If, due to the design of the conveyor belt (for example, textile conveyor belts or steel cord conveyor belts with a large thickness), the test according to procedure B2.1 cannot be performed, the test according to procedure B2.2 is performed with a reduced wrap angle;