BS EN 14973:2015

BSI Standards Publication

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

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National foreword

This British Standard is the UK implementation of EN 14973:2015. It supersedes BS EN 14973:2006+A1:2008 which is withdrawn.

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

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2015

ISBN 978 0 580 79324 0

ICS 53.040.20

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 30 November 2015.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14973

November 2015

ICS 53.040.10; 13.220.40

Supersedes EN 14973:2006+A1:2008

English Version

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 European Standard was approved by CEN on 26 September 2015.

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 CEN-CENELEC Management Centre or to any CEN member.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 14973:2015 E

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European foreword

This document (EN 14973:2015) has been prepared by 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 May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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 14973:2006+A1:2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are an integral part of this document.

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

Requirements for alternative Fire Propagation test, method D, added. For a defined range of belts this laboratory scale test can be substituted for the full scale test specified in EN 12881-2 and 8.4 of this document.

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.

Introduction

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

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.

1 Scope

This European Standard 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 European Standard 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 13463-1:2009.

This European Standard 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 European Standard 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 European Standard is given in Table 2. This is intended for quick reference only.

2 Normative references

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

EN 1554:2012, *Conveyor belts — Drum friction testing*

EN 1710:2005+A1:2008, *Equipment and components intended for use in potentially explosive atmospheres in underground mines*

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

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

EN 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 31010, *Risk management — Risk assessment techniques*

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

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

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

EN ISO 15236-3:2007, *Steel cord conveyor belts — Part 3: Special safety requirements for belts for use in underground installations (ISO 15236-3:2007)*

EN ISO 22721:2007, *Conveyor belts — Specification for rubber- or plastics-covered conveyor belts of textile construction for underground mining (ISO 22721:2007)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100 and the following apply.

3.1
afterflame
flame which persists after the ignition source has been removed

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
to flame (verb)
to undergo combustion in the gaseous phase with emission of light

3.5
glowing
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 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

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, eg 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 standard. Annex A of this standard and Annex A of EN 1710:2005+A1:2008 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, conveyor belts intended for use in underground installations shall have an electrical surface resistance not greater than 300 MΩ.

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 in accordance with EN 1554:2012, Method B2, or Method B1 if the use of Method B2 is impossible, e.g. when testing steel cord conveyor belts, conveyor belts intended for use in these applications shall exhibit no flame whatsoever, although glowing is permissible. No requirements are included for the maximum temperature of the drum.

6.2 Conveyor belts intended for use in installations where there is a potentially flammable atmosphere and where secondary safety devices are not present (Class B1)

When tested in accordance with EN 1554:2012, Method B2, or Method B1 if the use of Method B2 is impossible, e.g. when testing steel cord conveyor belts, conveyor belts intended for use in flammable atmospheres shall exhibit no flame or glow whatsoever and at no time shall the temperature of the drum exceed 450 °C.

NOTE If the intrinsic properties of the conveyor belt alone are to be used to give a safe situation in the presence of flammable atmospheres, it is important to limit the temperature of the drum and not to allow glow. The temperature of 450 °C was chosen as being adequately below the ignition temperature of methane-air mixtures when in the presence of a hot drum surface.

6.3 Conveyor belts intended for use in installations where there is a potentially flammable atmosphere plus combustible dust or material conveyed, and where secondary safety devices are not present (Class C1)

When tested in accordance with EN 1554:2012, Method B2, or Method B1 if the use of Method B2 is impossible, e.g. when testing steel cord conveyor belts, conveyor belts intended for use in the presence of coal dust shall exhibit no flame or glow whatsoever and at no time shall the temperature of the drum exceed 325 °C.

NOTE If the intrinsic properties of the conveyor belt alone are to be used to give a safe situation in the presence of combustible dusts or material conveyed, it is important to limit the temperature of the drum and not to allow glow to avoid the possibility of combustion of dust on the belt. The drum temperature of 325 °C was chosen as being adequately below the ignition temperature of coal dust on the belt when in the presence of a hot drum surface. However, if the conveyor belt is to be used in the presence of other dusts, the purchaser/user and manufacturer may agree alternative requirements on the basis of experience, e.g. a different maximum drum temperature that will give an adequate margin of safety over the ignition temperature of the dust in question.

7 Resistance to ignition

7.1 Conveyor belts intended for general use in underground installations (Class A), for use where there is a potentially flammable atmosphere (Classes B1 and B2), and for use in hazardous installations where secondary safety devices are present (Class C2)

When tested in accordance with EN ISO 340, the sum of the afterflame times for each group of six tests (i.e. six tests with covers intact and six tests with covers removed) shall be less than 45 s and no individual result shall be greater than 15 s.

7.2 Conveyor belts intended for use in installations where there is a potentially flammable atmosphere plus combustible dust or material conveyed, and where secondary safety devices are not present (Class C1)

When tested in accordance with EN ISO 340, the sum of the afterflame and afterglow times for six test pieces with covers intact shall be no more than 18 s and no individual result shall be greater than 10 s. When tested with covers removed, the sum of the afterflame and afterglow times for the six test pieces shall be no more than 30 s and no individual result shall be more than 15 s.

8 Fire propagation

8.1 Introduction

8.1.1 The requirements in 8.2 to 8.4 are based on resistance to the propagation of fire from a localized heat source. However, experience has shown that the two metre propane burner test given in EN 12881-1:2014, Method A (8.2.2) might not measure propagation if the conveyor belt is not fully ignited in the 10 min period of flame application. In these circumstances, the mid-scale high energy test given in EN 12881-1:2014, Method C (see 8.2.3 and 8.3) has been found to ignite all but the heaviest steel cord conveyor belts and to provide an adequate level of safety. The inability to ignite fully a belt in the 50 min period of the mid-scale high energy test implies a high level of resistance to fire propagation.

8.1.2 If, in the mid-scale high energy test, the conveyor belt is not fully ignited in the 50 min period of flame application, the double burner test given in EN 12881-1:2014, Method B (see 8.2.4 and 8.3) may be used to achieve full ignition. Although the double burner test ignites a wider range of conveyor belts, experience with conveyor belts other than those containing steel cord or aramid yarns is limited.

8.1.3 If there is the possibility of a major roadway fire due to the presence of fuel sources (fire load) additional to and greater than the conveyor belt and conveyed material alone, the full scale gallery test

described in EN 12881-2 (see 8.4.1) is used to provide adequate operational safety levels. Alternatively the laboratory scale test described in EN 12881-1:2014 Method D, may be used for a restricted range of conveyor belts (see 8.4.2)

8.1.4 The satisfactory performance of a conveyor belt in one of the propagation tests should not be taken to indicate that performance will necessarily be satisfactory in any of the other tests. Care is particularly needed in respect of the comparison of performance in the tests simulating resistance to propagation from a localized source and the test for propagation in a major roadway fire. Satisfactory performance in one test cannot be taken to indicate satisfactory performance in the other. The substitution of one of these tests, if previously specified for an installation, for another may result in a reduction in previously accepted standards of safety for that installation.

8.2 Conveyor belts intended for general use in underground installations (Class A) and for use where there is a potentially flammable atmosphere (Classes B1 and B2)

8.2.1 General

The conveyor belt shall comply with the requirement given in 8.2.2, except that, if incomplete ignition is achieved, the conveyor belt shall comply with the requirement given in 8.2.3 or 8.2.4.

The requirements in 8.2.3 and 8.2.4 are more severe than that in 8.2.2. Therefore, if the requirements in 8.2.3 or 8.2.4 are met, the requirement in 8.2.2 shall be met without further testing being required.

8.2.2 Two metre propane burner test

When tested in accordance with EN 12881-1:2014, Method A, the length of the test piece that remains undamaged shall be not less than 100 mm across the whole width of the conveyor belt.

8.2.3 Double burner test

When tested in accordance with EN 12881-1:2014, Method B, there shall be some of the test piece remaining undamaged across the whole width of the conveyor belt.

8.2.4 Mid-scale high energy test

When tested in accordance with EN 12881-1:2014, Method C, either

a) the length of the test piece that remains undamaged shall be not less than 600 mm across the whole width of the conveyor belt; or

b) the maximum average temperature rise shall not exceed 140 °C, the calculated length of conveyor belt consumed by mass shall not exceed 1 250 mm and the length of the test piece that remains undamaged shall be not less than 50 mm across the whole width of the conveyor belt.

8.3 Conveyor belts intended for use in installations where there is a potentially flammable atmosphere plus combustible dust or material conveyed, and where secondary safety devices are not present (Class C1)

When tested in accordance with EN 12881-1:2014, Method B or Method C, the conveyor belt shall meet the requirement specified in 8.2.3 or 8.2.4, as appropriate.

8.4 Conveyor belts intended for use in installations where there is a potentially flammable atmosphere plus combustible dust or material conveyed, plus additional fuel sources (fire load) and where secondary safety devices are present (Class C2)

8.4.1 Full scale gallery

When tested in accordance with EN 12881-2, the propagation of burning shall not extend more than 10 m beyond the position of the initial fuel source.

8.4.2 Laboratory scale gallery

When tested in accordance with EN 12881-1:2014, Method D, the conveyor belt shall meet the requirements as given in Table 1

Table 1 – Requirements when tested in accordance with EN 12881–1:2014, Method D

Belt Type	2 layer (Duoply)		1 layer (Solid Woven)	
Nominal Breaking load N/mm	Up to 1000	> 1000 - 1250	Up to 1250	> 1250 - 2000
Test Condition	1	1	1	2
	Mean undamaged length (mm)			
Supplied Belt Width				
Up to 1200mm	500	550	650	650
> 1200 to 1400mm			680	720

9 Marking

Conveyor belts shall be marked in accordance with EN ISO 15236-3:2007, Clause 11 or EN ISO 22721:2007, Clause 17, as appropriate.

Table 2 — Summary of safety classes for conveyor belts for underground installations

CLASS	APPLICATION	SURFACE RESISTANCE EN ISO 284	DRUM FRICTION EN 1554, **Method B2**[a]			IGNITION EN ISO 340		FIRE PROPAGATION METHOD **See footnotes c – g for requirements**
			Flame	**Glow**	**Maximum drum temperature °C**	**Aggregate of each set of six test piecess**	**Maximum for any one test piece s**	
A	General use, only hazard being limited access and means of escape	≤ 300 MΩ	No	Permitted	No limit	< 45/45[b]	15	EN 12881–1:2014, Method A[c]. If incomplete ignition achieved, use Method B[d] or C[e]
B1	As Class A plus potentially flammable atmosphere. No secondary safety devices	≤ 300 MΩ	No	No	450	< 45/45[b]	15	EN 12881–1:2014, Method A[c]. If incomplete ignition achieved, use Method B[d] or C[e]
B2	As Class A plus potentially flammable atmosphere. With secondary safety devices	≤ 300 MΩ	No	Permitted	No limit	< 45/45[b]	15	EN 12881–1:2014, Method Ac. If incomplete ignition achieved, use Method B[d] or C[e]
C1	As Class B1 plus combustible dust or material conveyed. No secondary safety devices	≤ 300 MΩ	No	No	325	≤ 18/30[b]	10/15[b]	EN 12881–1:2014, Method B[d] or C[e]
C2	As Class B1 plus combustible dust or material conveyed and additional fuel sources (fire load). With secondary safety devices	≤ 300 MΩ	No	Permitted	No limit	< 45/45[b]	15	EN 12881–2[g], or EN 12881–1:2014, Method D[f] for belts according to Table 1

[a] EN 1554:2012, Method B1 may be used where Method B2 cannot be used due to belt construction, e.g. steel cord conveyor belts.

[b] Values following tests with covers and without covers, respectively.

[c] When tested in accordance with EN 12881–1:2014, Method A, the length of the test piece that remains undamaged shall be not less than 100 mm across the whole width of the conveyor belt.

[d] When tested in accordance with EN 12881–1:2014, Method B, there shall be some of the test piece remaining undamaged across the whole width of the conveyor belt.

[e] When tested in accordance with EN 12881–1:2014, Method C, either the length of the test piece that remains undamaged shall be not less than 600 mm across the whole width of the conveyor belt; or the maximum average temperature rise shall not exceed 140 °C, the calculated length of conveyor belt consumed by mass shall not exceed 1 250 mm and the length of the test piece that remains undamaged shall be not less than 50 mm across the whole width of the conveyor belt.

[f] When tested in accordance with EN 12881–1:2014, Method D, the conveyor belt shall meet the requirements as given in Table 1

[g] When tested in accordance with EN 12881–2, the propagation of burning shall not extend more than 10 m beyond the position of the initial fuel source.

Annex A
(informative)

Hazards and risk assessment

A.1 Identification of hazards

During the preparation of this European Standard, the following hazards have been identified as being directly related to the use of conveyor belts underground and are in addition to the basic hazard of limited access and means of escape caused by confined working areas:

a) the build-up and discharge of static electricity, which could ignite flammable atmospheres or result in electric shocks to personnel; *(see Clause 5)*

b) local heating caused by friction, e.g. a rotating drive and a stalled conveyor belt, or a stationary drive and a moving conveyor belt that could ignite the belt or ignite flammable atmospheres or ignite combustible dusts; *(see Clause 6)*

c) ignition of a conveyor belt by a small heat source such as a naked flame, jammed conveyor belt rollers or belts rubbing against supports or support structures; *(see Clause 7)* and

d) the propagation of a fire along a conveyor belt which has been ignited. This ignition can be caused by a relatively small localized source such as an overheated failed idler bearing, or by a much larger fire fuelled by other equipment or materials in the roadway. The latter becomes increasingly significant at greater depths, higher rock temperatures and pressures, longer egress ways and where there is a high concentration of plastics materials, additional to the conveyor belt, in the roadways. *(see Clause 8)*

A.2 Risk assessment

The assessment of risk associated with the use of conveyor belts shall be conducted in accordance with EN ISO 12100 and any risk analysis shall be conducted in accordance with EN 31010. Guidance on the principles of risk assessment may be found in EN ISO 12100. Particular attention shall be given to the identification of potential ignition sources, i.e. fire or glow from the conveyor belt as described in 5.2.2.2 of EN 13463-1:2009.

The risk assessment shall identify the hazards that need to be addressed as well as their probability of occurrence and the severity of consequence. The tests that are considered most appropriate to this risk assessment can then be selected.

The risk assessment shall also take account of any additional hazards that may be present and consider whether secondary safety measures, in conjunction with, or instead of certain test requirements may be needed to provide a satisfactory operational safety level. For example the level of fire resistance of a conveyor belt considered to be necessary may depend on whether secondary safety devices are in use at the intended site of application.

As it is not at present possible to determine absolutely the level of fire resistance that is appropriate to ensure a safe situation, the importance of applying the results of experience to the risk assessment cannot be overemphasized. Substantial experience of the safe use of conveyor belts underground is available and this European Standard makes use of this experience to provide guidance on the requirements that may be needed for safe operation.

The hazards listed should not be taken as the only ones affecting operational safety. Other aspects, such as health or environmental requirements, might have to be considered and these might require additional or alternative safety precautions to be employed.

A.3 Methods for addressing hazards

If the intrinsic properties alone of the conveyor belt are to be used to address the hazards, the following test methods have been found to be appropriate.

a) **Static electricity**. EN ISO 284 is universally accepted as a suitable means of measuring the electrical surface resistance of conveyor belts.

b) **Frictional heating between the conveyor belt and the drive**. This hazard can be addressed satisfactorily by using the drum friction test described in EN 1554.

c) **Ignition**. This hazard can be addressed by using the laboratory burner tests described in EN ISO 340.

d) **Fire propagation**. Resistance to the propagation along the conveyor belt of a fire initiated from a relatively small localized heat source such as an overheated failed idler bearing has been measured using the tests described in EN 12881-1:2014, i.e. Methods A, B, and C, respectively. However, experience has shown that Method A might not measure propagation if the conveyor belt is not fully ignited in the 10 min period of flame application. In Method C, the 50 min period has been found to ignite all but the heaviest of steel cord conveyor belts. Method B provides a highly efficient ignition source, but experience with conveyor belts other than those containing steel cord or aramid yarns is limited.

   Resistance to the propagation along the conveyor belt of a fire initiated by a major conflagration in a roadway has been measured using the test described in EN 12881-2. This test simulates a situation where the fuel source that has been ignited is additional to and greater than that from the conveyor belt and conveyed material alone, e.g. timber lining in the roadway or plastic pipes, and where these materials may become involved in the fire. The test has been found to be appropriate in situations where there are greater depths, higher rock pressures and temperatures and where there is a high concentration of polymeric materials in the roadway. The test described in EN 12881-1:2014, Method D, has also been found to be appropriate for a limited range of belts. (see Table 1)

   Alternatively, secondary safety measures can be used, possibly in conjunction with the intrinsic properties of the belt.

The manufacturer/assembler of the conveyor shall show how each potential hazard associated with the entire conveyor has been addressed. Some examples of items particularly relevant to the conveyor belt are given in Annex B.

Annex B
(informative)

Example of an ignition hazard assessment for a conveyor belt intended for use in a potentially explosive atmosphere

Table B.1 — Example of an ignition hazard assessment

Potential ignition sources		**Example of measures applied to prevent the sources becoming effective**	**Ignition protection used**
Normal Operation	**Faults that cannot be ignored**		
Static electricity discharge		Use of sufficiently conductive conveyor belt to prevent charge build up (surface resistance ≤ 300MΩ when tested according to EN ISO 284)	EN 13463–1 (user instructions on belt replacement)
	Jammed/stalled conveyor belt, drive drums continue to rotate.	Conveyor belt has undergone a drum friction test according to EN 1554. No secondary safety devices are present on this installation, hence conveyor belt has been selected to meet the requirements of Class B1 of EN 14973.	EN 13463–5 constructional Safety "c"
	Conveyor belt idler roller seizes and is rubbed by the moving conveyor belt	Weekly examination is required for signs of deterioration e.g. abnormal bearing noise, visible discolouration and overheating. The conveyor belt meets the requirements of Class B1 of EN 14973 for ignition resistance (EN ISO 340) and/or fire propagation (EN 12881–1:2014).	EN 13463–1 (user instructions) and EN 13463–5 constructional Safety "c"
	Friction between the conveyor belt and fixed parts	Conveyor belt alignment monitors are fitted at the drive head. These are arranged to trip the drive motor if misalignment occurs, preventing any temperature increase.	EN 13463–6 Control of ignition source "b"

Annex C
(informative)

Suggested conveyor belt approval / compliance options

Where a series of conveyor belts can be shown to have the same basic construction and contain the same materials then it may be acceptable to approve / confirm compliance of this series on a range or family basis rather than test all options.

For example - Test lowest and highest tensile conveyor belts both fitted with minimum and maximum thickness covers

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 94/9/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive concerning equipment and protective systems intended for use in potentially explosive atmospheres, 94/9/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 94/9/EC

Clause(s)/sub-clause(s) of this EN	Essential Requirements (ERs) of Directive 94/9/EC	Qualifying remarks/Notes
Clause 4	1.0.1, 1.0.2 and 1.3	Ignition hazard assessment
Clause 5	1.1.3 and 1.3.2	Static electricity
6.1, 6.2 and 6.3	1.3.1 and 1.3.4	Frictional heating
7.1	1.1.3,1.3.1 and 1.3.4	Secondary safety devices in use
7.2	1.0.4,1.1.3, 1.2.4,1.3.1 and 1.3.4	Moving combustible material/dusts
8.2	1.1.3, 1.2.4,1.3.1 and 1.3.4	Fire propagation (FP)
8.3	1.1.3, 1.2.4,1.3.1 and 1.3.4	FP
8.4	1.0.4,1.1.3, 1.2.4,1.3.1 and 1.3.4	FP + additional fuel sources + secondary safety devices

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Annex ZB
(informative)

Relationship between this European Standard and the Essential Requirements of EC Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide one means of conforming to Essential Requirements of the New Approach Directive for machinery, 2006/42/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the Essential Requirements

1.5.6 Fire

1.5.7 Explosion

of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Bibliography

[1] EN ISO 21183-1:2006, *Light conveyor belts — Part 1: Principal characteristics and applications (ISO 21183-1:2005)*

[2] EN 1127-2, *Explosive atmospheres — Explosion prevention and protection — Part 2: Basic concepts and methodology for mining*

[3] EN 13463-5, *Non-electrical equipment intended for use in potentially explosive atmospheres — Part 5: Protection by constructional safety 'c'*

[4] EN 13463-6, *Non-electrical equipment for use in potentially explosive atmospheres — Part 6: Protection by control of ignition source 'b'*

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