



SLOVENSKI STANDARD

SIST EN 12882:2008

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Conveyor belts for general purpose use - Electrical and flammability safety requirements

Fördergurte für allgemeine Anwendung - Elektrische und brandtechnische
Sicherheitsanforderungen

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Courroies transporteuses a usage général - Prescriptions de sécurité électrique et
protection contre l'inflammabilité

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Ta slovenski standard je istoveten z: EN 12882:2008

ICS:

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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EUROPEAN STANDARD

EN 12882

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2008

ICS 53.040.20

Supersedes EN 12882:2001

English Version

Conveyor belts for general purpose use - Electrical and flammability safety requirements

Courroies transporteuses à usage général - Prescriptions de sécurité électrique et protection contre l'inflammabilité

Fördergurte für allgemeine Anwendung - Elektrische und brandtechnische Sicherheitsanforderungen

This European Standard was approved by CEN on 24 August 2008.

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

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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.

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

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

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Foreword

This document (EN 12882:2008) has been prepared 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 April 2009, and conflicting national standards shall be withdrawn at the latest by April 2009.

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 12882:2001.

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 EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA and B, which is an integral part 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, 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 the United Kingdom.

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EN 12882:2008 (E)**Introduction**

This document is a type C standard as stated in EN ISO 12100-1.

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.

During the preparation of this European Standard, the hazards which have been identified as being directly related to the use of conveyor belts are:

- a) hazards associated with the discharge of static electrical energy;
- b) hazards associated with the impingement of small naked flames on the cover and/or carcass of a conveyor belt at rest;
- c) hazards caused by the stalling of a conveyor belt and the continued operation of the driving mechanism causing localized heating of the conveyor belt through contact with the driving drum or cylinder or some other source of frictional heat;
- d) hazards caused by the propagation of a flame along a belt which has been exposed to a relatively high energy source such as a fire.

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The risk, or probable rate of occurrence of these hazards and the degree of harm they can cause will vary depending upon the particular circumstances of the application or site of application, which are many and varied. Consequently the level of safety required will vary from one application to another, depending upon the risks judged to be pertinent. The hazards listed above should not be taken as the only properties affecting safety in operation. Other aspects such as health or environmental requirements should be considered. Depending on the individual end use requirement, these other factors can affect the category of belt selected and additional safety precautions may need to be employed.

This European Standard is therefore designed to enable the user to select the category of conveyor belt most suited to the particular circumstances of the application.

The principal changes from the first edition of EN 12882 are as follows:

- e) the surface potential, when measured in accordance with EN ISO 21179, has been increased from 500 V to 1 000 V, in the light of further experience since EN 12882:2001 was published;
- f) Annex A, which was an Extract from CENELEC Report CLC/R 044-001 "Safety of machinery – Guidance and recommendations for the avoidance of hazards due to static electricity", has been deleted as its inclusion has caused confusion between users and manufacturers of belts.

1 Scope

This European Standard specifies electrical and flammability safety requirements for general purpose conveyor belts not intended for use in underground installations and a means of categorizing conveyor belts in terms of the level of safety sought in their end use application. This European Standard does not provide electrical safety requirements for volume resistance which may be measured by the methods in EN ISO 21178 and which is relevant to some types of light conveyor belts.

This European Standard is not applicable to conveyor belts which are manufactured before the date of publication of this document by CEN.

NOTE 1 Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres can be applicable to the type of machine or equipment covered by this European Standard. The present standard is not intended to provide means of complying with the essential health and safety requirements of Directive 94/9/EC, this being covered in EN 14973.

NOTE 2 EN 12882 is not a product standard but is intended to help users of conveyor belts to select the required electrical and flammability safety properties needed following a suitable risk assessment. No requirements are, therefore, included for marking, information to be supplied, etc., these matters being covered in relevant product standards such as EN ISO 14890 and EN ISO 15236-1.

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.

EN 619, *Continuous handling equipment and systems – Safety and EMC requirements for equipment for mechanical handling of unit loads* SIST EN 12882:2008

EN 620, *Continuous handling equipment and systems – Safety and EMC requirements for fixed belt conveyors for bulk materials* 86cc61163db4/sist-en-12882-2008

EN 1554:1998, *Conveyor belts – Drum friction testing*

EN 12881-1:2005, *Conveyor belts – Fire simulation flammability testing – Part 1: Propane burner tests*

EN ISO 284, *Conveyor belts – Electrical conductivity – Specification and test method (ISO 284:2003)*

EN ISO 340, *Conveyor belts – Laboratory scale flammability characteristics – Requirements and test method (ISO 340:2004)*

EN ISO 12100-2, *Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 21178, *Light conveyor belts – Determination of electrical resistances (ISO 21178:2005)*

EN ISO 21179, *Light conveyor belts – Determination of the electrostatic field generated by a running light conveyor belt (ISO 21179:2005)*

EN ISO 21183-1, *Light conveyor belts – Part 1: Principal characteristics and applications (ISO 21183-1:2005)*

3 Terms and definitions

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

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- 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
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**
part remaining of a conveyor belt after the termination of the propane gallery fire test described in accordance with EN 12881-1 and which shows no evidence of embrittlement, cracking, blistering or other blemishes not originally present

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4 Safety requirements

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4.1 Electrical conductivity <https://standards.iteh.ai/catalog/standards/sist/955d224a-aa21-4e94-aaa6-86cc61163db4/sist-en-12882-2008>

4.1.1 When tested in accordance with EN ISO 284, all general purpose conveyor belts shall have an electrical surface resistance not greater than 300 MΩ.

4.1.2 Light conveyor belts as described in EN ISO 21183-1 shall have an electrical surface resistance not greater than 300 MΩ when tested in accordance with EN ISO 21178 unless one of the conditions described in 4.1.2.1 to 4.1.2.3 applies.

4.1.2.1 Light conveyor belts with an internal conductive layer shall not generate an electrostatic charge resulting in a surface potential of more than 1 000 V when tested in accordance with EN ISO 21179.

4.1.2.2 Under special service conditions, whereby higher electrostatic charges resulting in surface potentials of more than 1 000 V can be generated due to friction between a light conveyor belt and conveyed goods, or due to friction within the conveyed goods or due to the run of the light conveyor belt over a reverse roller, safety requirements shall be agreed between the purchaser/user and the manufacturer based on the actual circumstances of use.

NOTE Critical goods in this respect are mostly bulk goods such as sugar, flour or plastic granules. The requirements for safety in this standard do not consider such critical service conditions, but only the run of the empty light conveyor belt and the electrostatic charges generated thereby.

4.1.2.3 In certain circumstances (e.g. in the transportation of electronic components), the electrical safety requirement can be specified in terms of volume resistance as measured by the method described in EN ISO 21178, and values shall be agreed between the purchaser/user and the manufacturer based on the actual circumstances of use.

4.2 Flame retardation

4.2.1 Conveyor belts in category 2A or 3A (see Clause 5 and Table 1), when tested in accordance with EN ISO 340 with covers intact, shall have an aggregate of the times for duration of flame for all six tests of less than 45 s and no individual result shall be greater than 15 s.

4.2.2 Conveyor belts in category 2B and 3B (see Clause 5 and Table 1), when tested in accordance with EN ISO 340 with covers intact and also with covers removed, shall have an aggregate of the times for duration of flame for each group of six tests, (i.e. six tests with covers intact and six tests with covers removed) of less than 45 s and no individual result shall be greater than 15 s.

4.3 Fire simulation

Conveyor belts in categories 4A and 4B, 5A, 5B and 5C (see Clause 5 and Table 1), when tested in accordance with Method A of EN 12881-1:2005, shall retain a length of undamaged conveyor belt of not less than 100 mm across the whole width of the conveyor belt after the end of the test.

4.4 Drum friction

4.4.1 Conveyor belts in categories 3A, 3B and 4B (see Clause 5 and Table 1), when tested in accordance with Method A1 of EN 1554:1998 (constant load of 343 N), shall exhibit no flame whatsoever throughout the test, which shall continue for 1 h duration, or until the belt breaks, whichever is the shorter time.

4.4.2 Conveyor belts in category 5A (see Clause 5 and Table 1), when tested in accordance with Method A2 of EN 1554:1998, shall exhibit no flame whatsoever throughout the test, which shall continue for 2h30 min duration, or until the belt breaks, whichever is the shorter time.

4.4.3 Conveyor belts in category 5B (see Clause 5 and Table 1), when tested in accordance with Method A2 of EN 1554:1998, shall exhibit no flame or glowing whatsoever throughout the test, which shall continue for 2h30 min duration, or until the belt breaks, whichever is the shorter time.

4.4.4 Conveyor belts in category 5C (see Clause 5 and Table 1), when tested in accordance with Method A2 of EN 1554:1998, shall exhibit no flame or glowing whatsoever throughout the test, which shall continue for 2h30 min duration, or until the belt breaks, whichever is the shorter time, and at no time during the test shall the drum temperature exceed 400 °C.

5 Safety categories

NOTE A summarized tabular presentation of the requirements in Clause 4 and Clause 5 is given in Table 1.

5.1 Category 1

A conveyor belt shall be designated only as a category 1 conveyor belt if it complies with the requirements in 4.1.

5.2 Category 2A

A conveyor belt shall be designated as a category 2A conveyor belt only if it complies with the requirements of 4.1 and 4.2.1.

5.3 Category 2B

A conveyor belt shall be designated as a category 2B conveyor belt only if it complies with the requirements of 4.1 and 4.2.2.