



# SLOVENSKI STANDARD

## SIST EN 12882:2002

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

Fördergurte für allgemeine Anwendung - Elektrische und brandtechnische  
Sicherheitsanforderungen

(standards.iteh.ai)

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

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### 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

**SIST EN 12882:2002**

**en**

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ICS 13.220.40; 53.040.20

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 12 November 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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Contents

	page
<b>Foreword</b>	<b>2</b>
<b>Introduction</b>	<b>3</b>
<b>1 Scope</b>	<b>4</b>
<b>2 Normative references</b>	<b>4</b>
<b>3 Terms and definitions</b>	<b>5</b>
<b>4 Requirements for safety</b>	<b>5</b>
<b>5 Safety categories of conveyor belts</b>	<b>7</b>
<b>Annex A (informative) Extract from CENELEC Report R044-OO1 “Safety of machinery – Guidance and recommendations for the avoidance of hazards due to static electricity” of February 1999-11-26</b>	<b>13</b>
<b>Annex ZA (informative) Relationship of this document with EC Directives</b>	<b>14</b>

[SIST EN 12882:2002](https://standards.iteh.ai/catalog/standards/sist/09426b1-ad65-442b-85af-78f251e6327e/sist-en-12882-2002)

**Foreword**

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This European Standard 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 June 2002, and conflicting national standards shall be withdrawn at the latest by June 2002.

This European Standard 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, which is an integral part of this standard.

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

Annex A is informative.

## Introduction

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;

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.

## 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 1637 and which is relevant to some types of light conveyor belts.

NOTE 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.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

- EN 292-2 Safety of machinery - Basic concepts, general principles for design (Part 2 Technical principles and specification).
- prEN 619 Continuous handling equipment and systems - Safety and EMC requirements for equipment for mechanical handling of unit loads.
- prEN 620 Continuous handling equipment and systems - Safety and EMC requirements for fixed belt conveyors for bulk materials.
- EN 873 Light conveyor belts - Principal characteristics and applications.
- EN 1554:1998 Conveyor belts - Drum friction testing.
- EN 1637 Light conveyor belts - Test methods for the measurement of the electrical resistances.
- EN 1718 Light conveyor belts - Test method for the measurement of the electrostatic field generated by a running light conveyor belt.
- prEN 12881-1:1997 Conveyor belts - Fire simulation flammability testing - Part 1: Propane gallery tests.
- EN 20284 Conveyor belts - Electrical conductivity - Specification and method of test (ISO 284:1982).
- EN 20340 Conveyor belts - Flame retardation – Specifications and test method (ISO 340:1988).

### 3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions 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

##### **flame** (verb)

to undergo combustion in the gaseous phase with emission of light

#### 3.4

##### **glowing**

made luminous by heat, (*without flame*)

#### 3.5

##### **undamaged**

part remaining of a conveyor belt after the termination of the propane gallery fire test described in accordance with prEN 12881-1:1997 and which part shows no evidence of embrittlement, cracking, blistering or other blemishes not originally present

### 4 Requirements for safety

#### 4.1 Electrical conductivity

All general purpose conveyor belts shall have an electrical resistance less than 300 M $\Omega$  when tested in accordance with EN 20284.

Light conveyor belts as described in EN 873 shall have an electrical resistance of less than 300 M $\Omega$  when tested in accordance with EN 1637.

Light conveyor belts with an internal conductive layer which fail to meet the above requirement shall not generate an electrostatic charge resulting in a surface potential of more than 500 V when tested in accordance with EN 1718.

Under special service conditions, higher electrostatic charges resulting in surface potentials of more than 500 V can be generated due to friction between conveyor

belt and conveyed goods, or due to friction within the conveyed goods or due to the run of the belt over a reverse roller. 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. In these circumstances an agreement on the safety requirements should be made between the user and the supplier or manufacturer, based on the actual circumstances of use (See informative annex A).

In certain circumstances, electrical safety requirements for light conveyor belting (see EN 873) can be specified in terms of volume resistance as measured by the methods in EN 1637.

## **4.2 Flame retardation- Requirements**

**4.2.1** Conveyor belts in category 2A or 3A, (see clause 5 and Table 1), when tested in accordance with EN 20340 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 20340 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.

**4.2.3** Until EN 20340 is amended, the test pieces for the purposes of applying the test to steel cord conveyor belting, shall be selected as follows :

Select 6 test pieces in the longitudinal direction of the belt from the central part of the conveyor belt sample . Each test piece is 200 mm long x 20 mm to 30 mm wide , depending on the cord diameter and pitch, but the target width shall be as close to the requirement of 25 mm as these considerations permit. Ensure that at least two cords are included within the test piece and that the cut edges represent the centreline between adjacent cords.

## **4.3 Fire simulation flammability testing - Requirements**

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 prEN 12881-1:1997 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 testing - Requirements**

**4.4.1** Conveyor belts in categories 3A, 3B and 4B (see clause 5 and Table 1), when tested in accordance with Method A 1 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 2 h 30 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 2 h 30 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 2 h 30 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 of conveyor belts

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.