



SLOVENSKI STANDARD
SIST EN 1554:1999

01-april-1999

Naprave za kontinuirni transport - Trakovi tračnih transporterjev - Preskušanje trenja na pogonskem bobnu

Conveyor belts - Drum friction testing

Fördergurte - Prüfung der Trommelreibung

Courroies transporteuses - Essais de frottement au tambour

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ICS:

53.040.20 Deli za transporterje Components for conveyors

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en

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EUROPEAN STANDARD

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English version

Conveyor belts - Drum friction testing

Courroies transporteuses - Essais de frottement au tambour

Fördergurte - Prüfung der Trommelreibung

This European Standard was approved by CEN on 8 October 1998.

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

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Foreword

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of an identical text or by endorsement, at the latest by May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

It is one of a series of standards concerned with direct safety assessment of conveyor belts, viz:

- EN 20 284 Conveyor belts - Electrical conductivity - Specification and method of test
- EN 20 340 Conveyor belts - Flame retardation - Specifications and test method
- prEN 12881-1 Conveyor belts - Fire simulation flammability testing - Part 1: Two metre single burner propane gallery test

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.

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Introduction

The purpose of this European Standard is to provide a method of test that will assist conveyor belt users in assessing the degree of risk which can be anticipated from the hazard caused when a conveyor belt stalls and the driving mechanism of the conveying system continues to operate, causing localized heating of the conveyor belt through contact with the driving drum or other frictional heat source.

For recommendations concerning safety categories of conveyor belts, reference should be made to EN 12882.

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1 Scope

This European Standard describes a method of test to determine the propensity of a conveyor belt to generate heat flame or glow when held stationary under a given tension, in surface contact around a rotating driven steel drum.

Means of varying the belt tension are described.

NOTE: For certain belt types, due to their construction, it may not be possible to conduct this test due to the inability of the belt to comply with the requirements of 6.2.3.

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.

- EN 418 Safety of machinery - Emergency stop equipment, functional aspects - Principles for design
- EN 10083-1:1991 Quenched and tempered steels - Part 1: Technical delivery conditions for special steels
- ISO 65 Carbon steel tubes suitable for screwing in accordance with ISO 7-1
- ISO 2604-2 Steel products for pressure purposes - Quality requirements -Part 2: Wrought seamless tubes
- ISO 2604-3 Steel products for pressure purposes - Quality requirements - Part 3: Electric resistance and induction welded tubes.
- EN 60584-1:1995 Thermocouples - Part 1: Reference tables (IEC 584-1:1995)

3 Principle

A test piece of conveyor belt, suitably mounted and tensioned, is wrapped half way around a rotating steel drum, simulating a stalled belt. The test is continued at specified tensions for a given time period, or until the belt breaks. The presence, or absence, of flame or glow is noted and reported and the maximum temperature of the drive drum is recorded. The test is conducted in still air or/and in moving air.

4 Apparatus

A general arrangement of a drum friction testing apparatus is shown in figure 1.

4.1 Steel drum of external diameter (210 ± 1) mm mounted on a horizontal axis and capable of being rotated under all load conditions at (200 ± 5) rpm throughout the test. The outer shell of the drum is manufactured from tube complying with ISO 2604 - 2 or ISO 2604 - 3. The drum shaft material is of grade 2 C 22 of EN 10083-1:1991.

NOTE: Experience has shown that motors of between 7,5 kW and 15 kW have proved suitable for maintaining these conditions, although for smaller motors a 'soft' start may be necessary.

Basic dimensions of the drum, shown in figure 2, are given in order to standardize its thermal characteristics. The variation in diameter along the length of the drum shall not exceed 1 mm.

Notwithstanding the dimensions and tolerances on drum diameter and shell thickness shown in figure 2, the effect of wear down to a minimum shell thickness of 6 mm is permissible, but the overall diameter of the drum must not thereby become less than 209 mm.

4.2 Drum temperature recording device, comprising a mineral-insulated stainless steel sheathed thermocouple having a maximum outside diameter of 2 mm and complying with EN 60584-1:1995. The tip of the thermocouple is set not more than 0,5 mm below the surface of the drum, midway along its length.

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NOTE 1: More than one thermocouple may be fitted in order to provide back-up in the event of failure.

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NOTE 2: Take care to see that the effective 'cold junction' temperature is compensated for or alternatively, is measured, and the appropriate correction made.

NOTE 3: The functioning of the rotating contacts should be checked periodically by observing that there is no change in the recorded temperature when the apparatus is run without a test piece.

Dimensions in millimetres

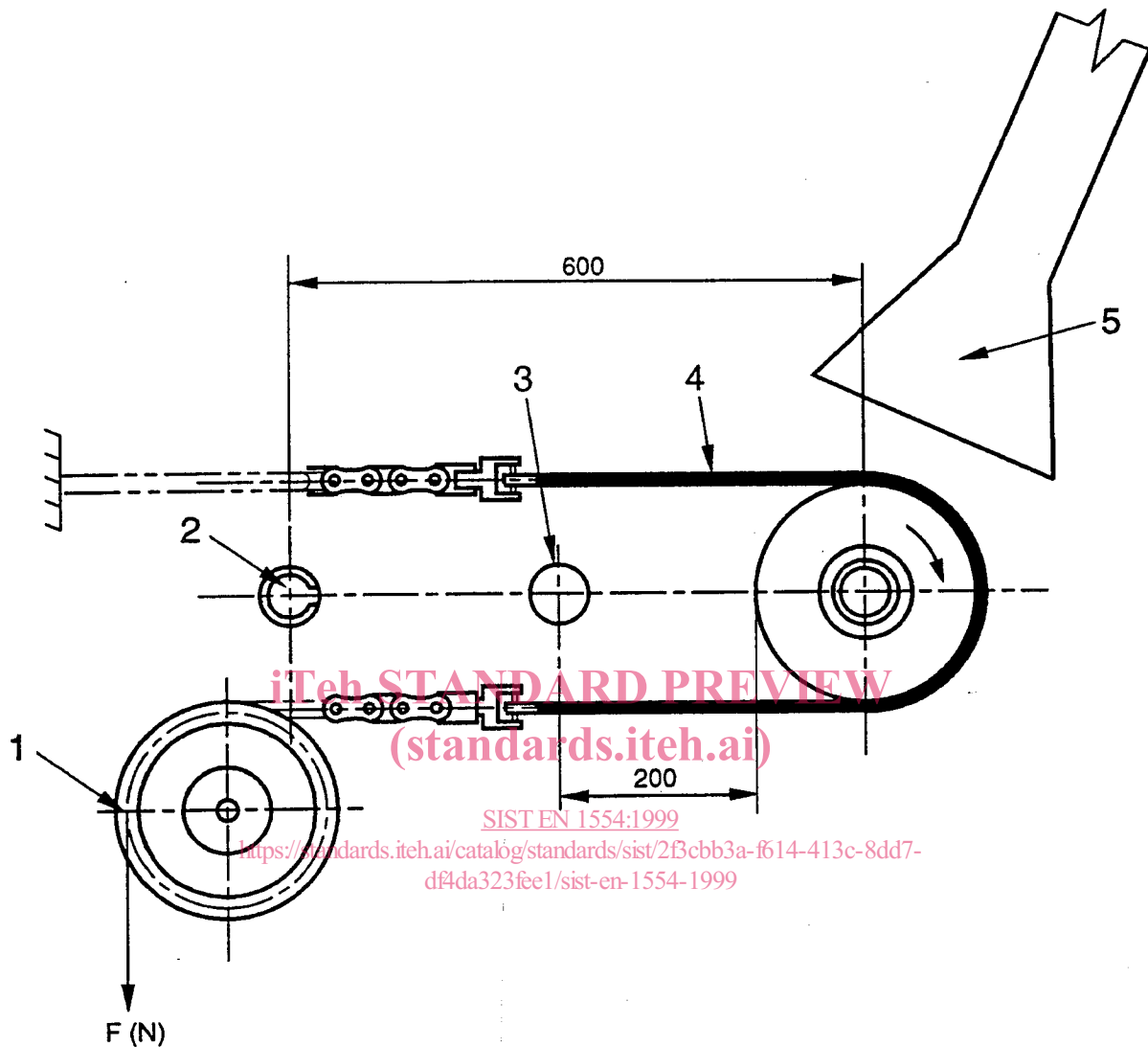


Figure 1: Schematic arrangement of drum friction apparatus