



SLOVENSKI STANDARD

SIST EN 13772:2011

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Nadomešča:
SIST EN 13772:2003

Tekstilije in tekstilni izdelki - Gorljivost - Zavese in zastori - Merjenje razširjanja plamena navpično nameščenih preskušancev z velikim začetnim vžigom

Textiles and textile products - Burning behaviour - Curtains and drapers - Measurement of flame spread of vertically oriented specimens with large ignition source

Textilien und textile Erzeugnisse - Brennverhalten von Vorhängen und Gardinen - Messung der Flammenausbreitungseigenschaften von vertikal angeordneten Messproben bei Einwirkung großer Zündquellen

Textiles et produits textiles - Comportement au feu - Rideaux et tentures - Mesurage de la propagation de flamme d'éprouvettes orientées verticalement, avec une source d'allumage importante

Ta slovenski standard je istoveten z: EN 13772:2011

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
97.160	Tekstilije za dom. Perilo	Home textiles. Linen

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EUROPEAN STANDARD

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English Version

Textiles and textile products - Burning behaviour - Curtains and drapes - Measurement of flame spread of vertically oriented specimens with large ignition source

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This European Standard was approved by CEN on 3 December 2010.

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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-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 13772:2011) has been prepared by Technical Committee CEN/TC 248 "Textiles and textile products", 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of an identical text or by endorsement, at the latest by July 2011, and conflicting national standards shall be withdrawn at the latest by July 2011.

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 13772:2003.

The main differences between this standard and the previous version are:

- all three marker threads shall be used;
- tolerances for the position of the electric radiator and for the tension of the marker threads have been introduced;
- the metal grid below the specimen has been defined more precisely;
- major adjustments to the cleansing procedure.

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, 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.

Introduction

In order to assess the burning behaviour of curtains and drapes two test methods were established, i.e. EN 1101 for the measurement of ignitability (based on EN ISO 6940) and EN 1102 for the measurement of flame spread (based on EN ISO 6941).

EN ISO 6941 measures the flame spread of vertically oriented specimens exposed to a defined small flame. This allows the flame spread properties of ignitable products to be determined. Nevertheless this test method is not suitable to assess products that do not ignite. The measurement of the length or area destroyed by the small flame is questionable as shown by round robin testing. There is a risk that products which pass the small flame test, can still be ignited with a larger ignition source.

The equipment used in EN ISO 6941 has therefore been modified by adding a radiator, which radiates on the lower part of the specimen in order to boost locally and temporarily the ignition of the specimen. The combination of this radiation and the small flame application simulates the action from a larger flaming source. With this combined ignition source some materials, not ignitable with the small flame, may ignite. Some of these will self extinguish, when the action from the ignition source has ceased, while others will self-propagate.

For this purpose, a European research project (CT 96-2057) was set up to establish a small scale test method for assessing the burning behaviour of curtains and drapes using a large ignition source. Reaction to fire parameters like smoke development, heat release and toxic components were not taken into account. The project involved eleven laboratories from nine European countries

In order to select the relevant characteristics of burning behaviour in terms of classification and to assess the repeatability and reproducibility, 15 samples of commercially available fabrics representative for the main product groups on the market were tested with the large ignition source test method. Most of them had a flame retardant treatment or coating. The material selection included standard and fire retardant polyester, cotton, modacryl, wool, chlorofibre and glass fibre and represented different structures and fibre blends.

The occurrence of flaming debris, the severance of marker threads and the time to sever marker threads (first and third threads) were selected as representative parameter to assess the burning behaviour of the samples. Other burning behaviour characteristics such as after-flame and after-glow times did not bring any extra relevant information and were discarded.

An inter-laboratory test was conducted in 1997 with ten laboratories, each testing 15 materials. Repeatability and reproducibility were assessed through statistical analysis. Consequently, some improvements were introduced in the method. Good agreement was also found with national test methods in use in various European countries or regions (France, Germany, Belgium, the Netherlands, Italy, Scandinavia and the United Kingdom).

1 Scope

This European Standard specifies a method for the measurement of flame spread of vertically oriented textile fabrics intended for curtains and drapes in the form of single or multi-component (coated, quilted, multilayered, sandwich construction and similar combinations) fabrics using a large ignition source.

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 367:1992, *Protective clothing — Protection against heat and fire — Method of determining heat transmission on exposure to flame*

EN 13773:2003, *Textiles and textile products — Burning behaviour — Curtains and drapes — Classification scheme*

EN ISO 139:2005, *Textiles — Standard atmospheres for conditioning and testing (ISO 139:2005)*

EN ISO 3175-2, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 2: Procedure for testing performance when cleaning and finishing using tetrachloroethene (ISO 3175-2:2010)*

EN ISO 3175-3, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 3: Procedure for testing performance when cleaning and finishing using hydrocarbon solvent (ISO 3175-3:2003)*

EN ISO 3175-4, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 4: Procedure for testing performance when cleaning and finishing using simulated wetcleaning (ISO 3175-4:2003)* <https://standards.iteh.ai/catalog/standards/sist/e7a03088-75b0-4e1d-b118-f97e1ce6e308/sist-en-13772-2011>

EN ISO 6330:2000, *Textiles — Domestic washing and drying procedures for textile testing (ISO 6330:2000)*

EN ISO 6941, *Textile fabrics — Burning behaviour — Measurement of flame spread properties of vertically oriented specimens (ISO 6941:2003)*

EN ISO 10528, *Textiles — Commercial laundering procedure for textile fabrics prior to flammability testing (ISO 10528:1995)*

3 Term and definition

For the purposes of this document, the following term and definition applies:

3.1

flaming debris

material separating from the specimen during the test procedure, falling below the initial edge of the specimen and igniting a filter paper

4 Principle

A heat flux of a defined energy is applied to a specified area of the lower part of the backside of the vertical specimen. After a period of exposure (30 s), the small flame defined in EN ISO 6941 is applied for 10 s to a small piece of cotton fabric fixed around the bottom edge of the specimen.

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The possible flame spread is measured through the severance of marker threads.

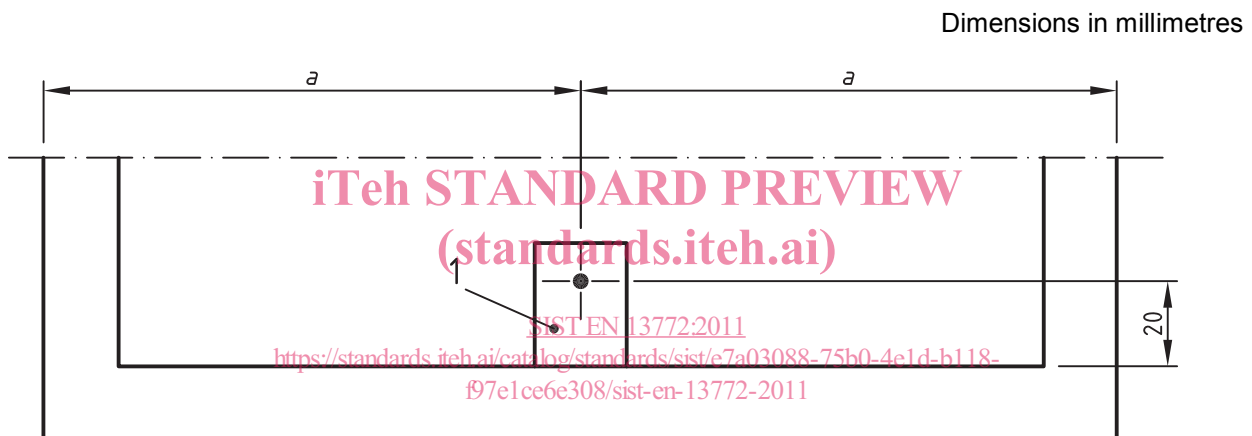
5 Health and safety of test operator

Burning materials may produce smoke and toxic and corrosive gases which can affect the health of operators. Between tests the atmosphere of the testing location, which should be of adequate dimensions to avoid endangering the health of operators, should be cleared of smoke and fumes by an extractor fan or other means of ventilation.

6 Apparatus and materials

This standard uses the equipment according to EN ISO 6941 modified as below.

6.1 Specimen holder: The specimen holder according to EN ISO 6941 has to be modified. To prevent the cotton cloth from falling down the specimen holder shall be equipped with an extra pin positioned centrally 20 mm from the bottom of the specimen on the holder (see below Figure 1).



Key

1 extra pin

Figure 1 — Lower part of the specimen holder according to EN ISO 6941 equipped with an extra pin

6.2 Electric radiator, made in a ceramic material and radiating over a circular area with the diameter (100 ± 5) mm. The radiator is heated by an electric resistor, formed in a spiral, which is covered by a $(1-1,5)$ mm thick layer of transparent quartz.

6.3 Electric variable transformer to set the voltage needed to get the heat radiation according to Clause 7.

6.4 Copper disc calorimeter: The calorimeter and allied equipment shall be in accordance with EN 367:1992, 5.2.

6.5 Movable shield made of a non-combustible material of low thermal conductivity; it is placed between the radiator and the test specimen. At least the full width of the lower part (200 mm) of the test specimen shall be shielded.

6.6 Marker threads that shall be of pure cotton with a linear density of (45 ± 5) tex. All three marker threads as specified in EN ISO 6941 are used. The position of the threads is given in Figure 3. The threads shall be under a tension equal to that produced by a weight of (75 ± 25) g. A possible arrangement for this is given in the same Figure 3.

6.7 Gas: commercial propane gas shall be used.

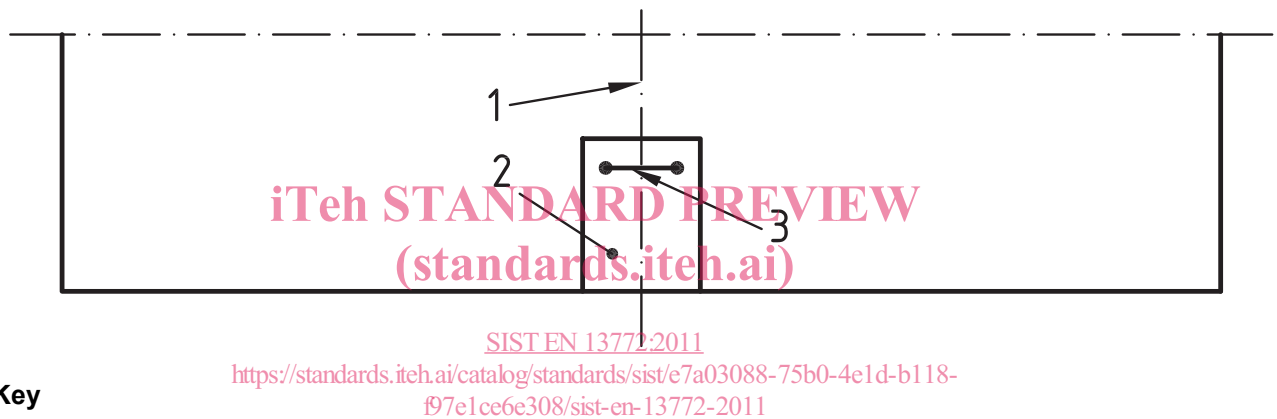
6.8 Cotton cloth: bleached fabric, plain weave, weight (160 ± 20) g/m². The material shall be washed one time before use according to EN ISO 6330:2000, programme 2A, drying procedure A, 1 g/l of the reference detergent IEC shall be used.

6.9 Staple to fasten the cotton cloth to the specimen.

6.10 Filter paper: area specific mass (80 ± 20) g/m², thickness $(0,20 \pm 0,05)$ mm, alpha cellulose content > 95 %.

6.11 Metal grid: stainless steel grid, to be placed horizontally (50 ± 5) mm below the lower edge of the specimen. The dimensions of the grid shall be (110 ± 20) mm × (150 ± 20) mm, the mesh size of the grid is not critical. Provision should be made to allow the free movement of the gas burner.

6.12 Anemometer capable of measuring air speed at a level of $(0,1-0,2)$ m/s.



Key

- 1 centre of the specimen
- 2 cotton cloth
- 3 staple

Figure 2 — Position of pieces of cotton cloth on the specimen