



# SLOVENSKI STANDARD

## SIST EN 1021-1:2006

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Furniture - Assessment of the ignitability of upholstered furniture - Part 1: Ignition source  
smouldering cigarette

iTeh STANDARD PREVIEW

Möbel - Bewertung der Entzündbarkeit von Polstermöbeln - Teil 2: Eine einem  
Streichholz vergleichbare Gasflamme als Zündquelle

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SIST EN 1021-1:2006

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Ameublement - Evaluation de l'allumabilité des meubles rembourrés - Partie 1 : Source  
d'allumage : cigarette en combustion

Ta slovenski standard je istoveten z: EN 1021-1:2006

### ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
97.140	Pohištvo	Furniture

SIST EN 1021-1:2006

en,fr,de

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 1021-1**

February 2006

ICS 13.220.40; 97.140

Supersedes EN 1021-1:1993

English Version

## Furniture - Assessment of the ignitability of upholstered furniture - Part 1: Ignition source smouldering cigarette

Ameublement - Evaluation de l'allumabilité des meubles  
rembourrés - Partie 2 : Source d'allumage : flamme  
équivalente à celle d'une allumette

Möbel - Bewertung der Entzündbarkeit von Polstermöbeln -  
Teil 2: Eine einem Streichholz vergleichbare Gasflamme  
als Zündquelle

This European Standard was approved by CEN on 16 December 2005.

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, 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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## Foreword

This European Standard (EN 1021-1:2006) has been prepared by Technical Committee CEN/TC 207 "Furniture", the secretariat of which is held by UNI.

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 August 2006, and conflicting national standards shall be withdrawn at the latest by August 2006.

This European Standard supersedes EN 1021-1:1993.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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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EN 1021-1:2006 (E)

## Introduction

This European Standard is one of a series of standards concerned with the ignitability of upholstered furniture using different ignition sources. The ignition source used in this European Standard is a smouldering cigarette.

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## 1 Scope

This European Standard specifies a test method to assess the ignitability of material combinations, such as covers and fillings used in upholstered seating, when subjected to a smouldering cigarette as an ignition source.

The test measures only the ignitability of a combination of materials used in upholstered seating and not the ignitability of a particular finished item of furniture incorporating these materials. They give an indication of, but cannot guarantee, the ignition behaviour of the finished item of furniture.

NOTE Test specimens prepared from materials taken from furniture that has been used may give different results to the same materials before use.

## 2 Terms and definitions

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

### 2.1

#### **progressive smouldering**

exothermic oxidation, not accompanied by flaming, that is self-propagating, i.e. independent of the ignition source. It may or may not be accompanied by incandescence

### 2.2

#### **flaming**

undergoing combustion in the gaseous phase with the emission of light

### 2.3 Cover

#### 2.3.1

##### **outer cover**

outer layer of the upholstery

#### 2.3.2

##### **inner cover**

thin layer of material used between the outer cover and the upholstery filling. Any inner cover greater than nominally 2 mm thick is part of the filling for test purposes

NOTE The term "interliner" is no longer used because it is non-specific and has been applied to different components within the composite.

### 2.4

#### **filling**

main upholstery material contained by the outer cover and (if used) the inner cover. It may consist of several different materials including any inner cover nominally greater than 2 mm thick

## 3 Criteria of ignition

### 3.1 Progressive smouldering ignition

For the purposes of this European Standard, all the following types of behaviour are considered to be progressive smouldering ignitions:

- a) any test assembly that displays escalating combustion behaviour so that it is unsafe to continue the test and active extinction is necessary;

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- b) any test assembly that smoulders until it is largely consumed within the test duration;
- c) any test assembly that smoulders to the extremities of the specimen, viz. upper or lower margins, either side or to its full thickness, within the duration of the test;
- d) any test assembly that smoulders after one hour from the beginning of the test;
- e) any test assembly that, on final examination (see 9.3), shows evidence of active smouldering.

NOTE In practice it has been found that there is usually a clear distinction between materials which may char under the influence of the ignition source but which do not propagate further (non-progressive combustion) and those where smouldering develops in extent and spreads (progressive combustion).

**3.2 Flaming ignition**

For the purposes of this European Standard, a flaming ignition is considered to be the occurrence of any flames initiated by a smouldering source.

**4 Principle**

To subject an assembly of upholstery materials to a smouldering cigarette ignition source. The assembly is arranged to represent in stylised form a junction between a seat and back (or seat and arm) such as might occur in a typical chair. The ignitability of an assembly is determined by applying smokers materials such as a cigarette. The test method measures the ignitability of the overall composite of materials, i.e. outer cover, inner cover, filling etc., as constructed on the test rig. The results shall not be stated as being applicable to the general behaviour of any individual component (see also Annex A).

**5 Health and safety of operators** [SIST EN 1021-1:2006](https://standards.iteh.ai/catalog/standards/sist/5c6fc029-fcc0-47e0-b592-6c1119263cf2/sist-en-1021-1-2006)

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**5.1 General**

The test method specified in this European Standard presents a considerable hazard; suitable precautions shall be taken.

**5.2 Enclosure**

For safety, the test should be conducted in a non-combustible fume cupboard. If such a cupboard is not available, a test enclosure should be constructed (see 6.2) so that the operator is protected from the fumes.

**5.3 Extinguishers**

Adequate means of extinguishing the assembly should be provided bearing in mind that some combinations may produce severe flaming during the test. A hand and/or fixed water spray which can be directed over the burning area can be useful. Other means such as suitable fire extinguishers, fire blankets and a bucket of water will assist.

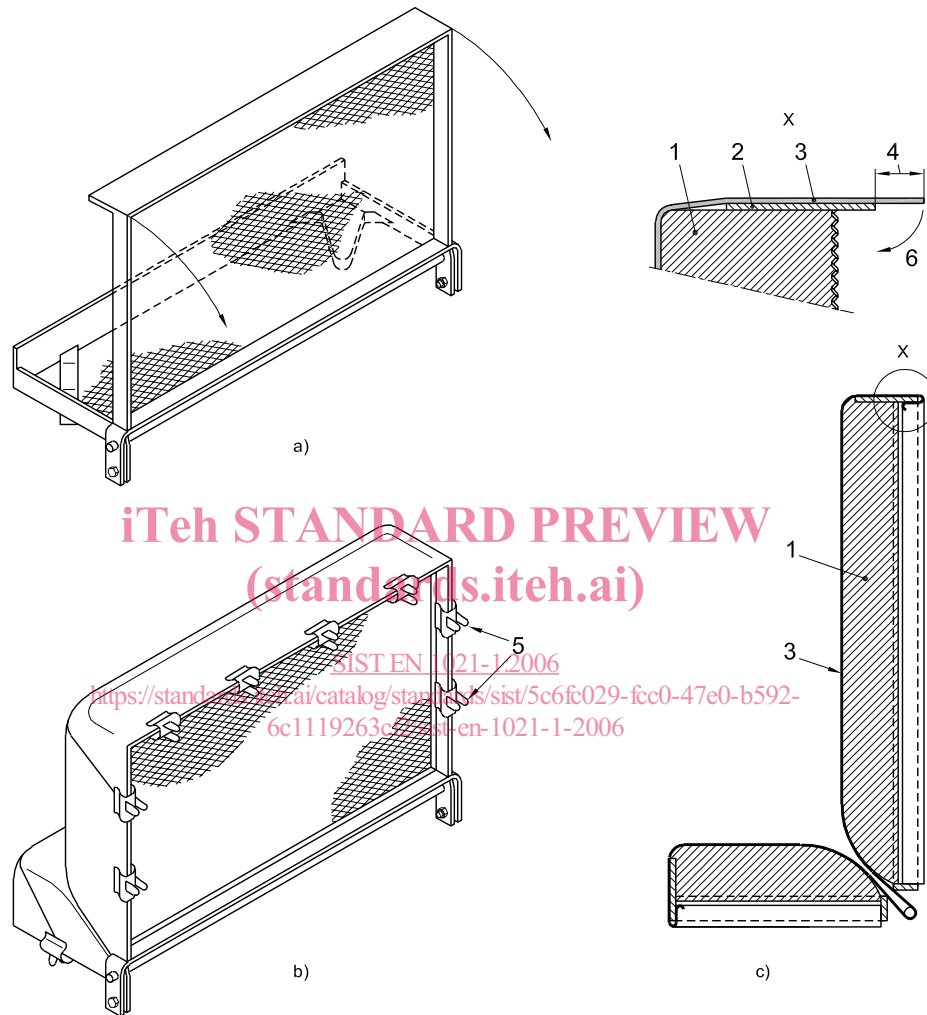
In some cases smouldering may be difficult to extinguish completely and complete immersion in water may be necessary.



## 6 Apparatus

### 6.1 Test rig

A suitable test rig is illustrated in Figures 1 and 2. It shall consist of two rectangular frames hinged together and capable of being locked at right angles to each other.



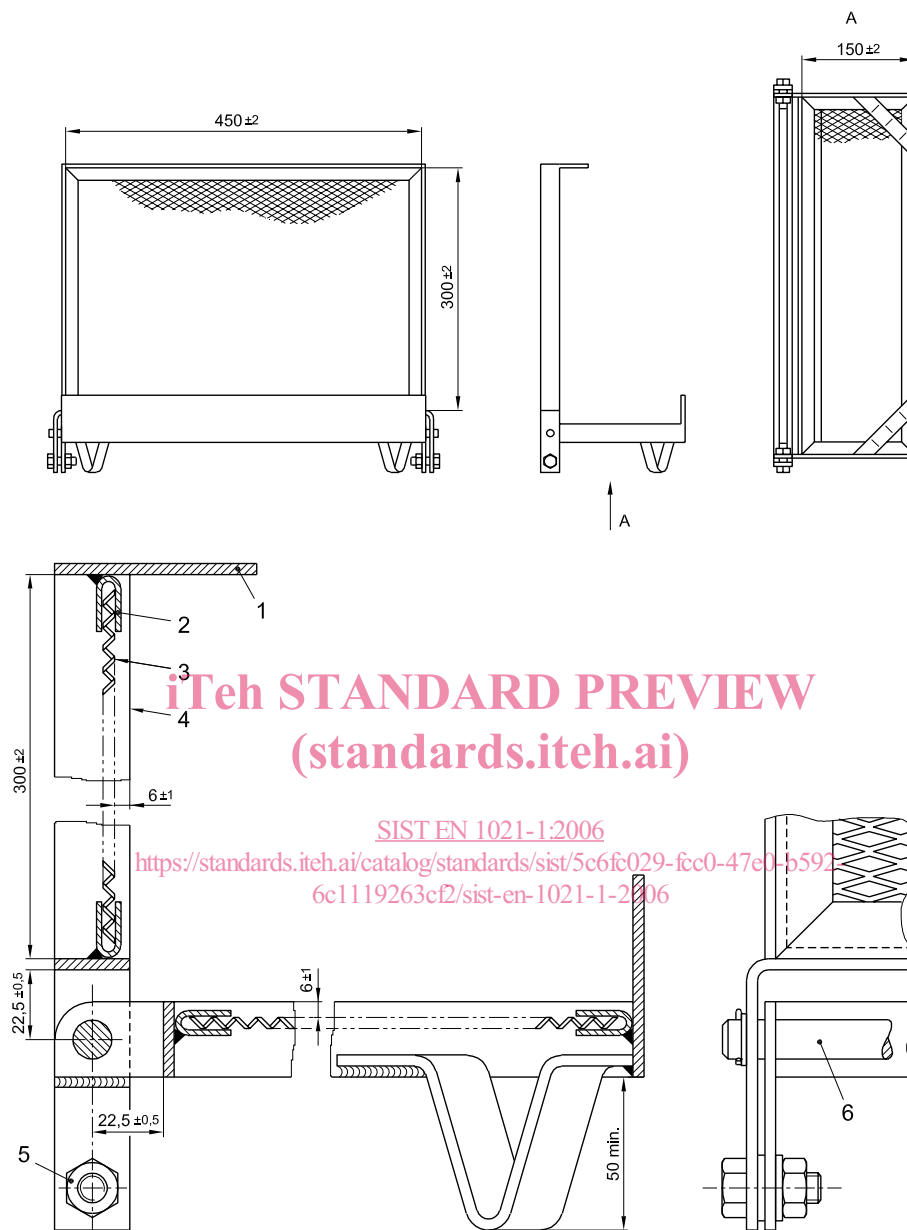
#### Key

- a) test rig
- b) test rig with cover and fillings
- c) vertical section
- X detail of fitting cover to frame
- 1 filling
- 2 end plate of frame
- 3 cover
- 4 overlap 20 mm
- 5 clips
- 6 fold cover overlap under frame to touch the steel mesh supporting the filling and fasten with clips as below

Figure 1 — Test rig assembly

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Dimensions in millimetres



NOTE 1 Unless tolerances are indicated, dimensions are nominal.

NOTE 2 All parts are made of steel.

**Key**

- 1 end plate of frame 65 mm x 3 mm
- 2 edging section
- 3 expanded metal mesh size 28 mm x 6 mm (see 6.1)
- 4 side member of frame 25 mm x 3 mm
- 5 M10 bolt, nut and washers
- 6 Ø 10 hinge rod

Figure 2 — Test rig detail

The sides and hinge edges of the frames shall be made from nominal 25 mm x 3 mm steel flat bar and shall securely hold mesh steel platforms set  $(6 \pm 1)$  mm below the top edge of the frames. (Mesh size should be such that an open mesh area of approximately 15 mm<sup>2</sup> to 150 mm<sup>2</sup> exists).

The upper edge of the vertical frame and the front edge of the horizontal frame shall be steel end plates 450 mm x 65 mm x 3 mm to prevent the test filling moving during the assembly of the test specimen (see Figures 1 and 2).

The internal width and height of the back frame shall be  $(450 \pm 2)$  mm x  $(300 \pm 2)$  mm and the width and depth of the base frame  $(450 \pm 2)$  mm x  $(150 \pm 2)$  mm. A standard edging section may be used around the mesh steel platform to give protection and greater rigidity.

The sides of the frame shall extend beyond the back of each frame to provide for the hinge holes and to form the back legs. The hinge rod shall be of nominal 10 mm diameter steel, continuous across the back of the rig and its axis  $(22,5 \pm 0,5)$  mm beyond the back member of each frame.

The frames shall be lockable at right angles by a bolt or pin through each of the pairs of members forming the back legs. The front legs may be welded across the front corners of the base frame. The height of the legs shall be such as to leave a gap not less than 50 mm high between the base and frame and the supporting surface.

For the tests the rigs shall be sited within the enclosure (see 6.2) and the testing shall be performed in a basically draught-free environment permitting an adequate supply of air and removal of smoke from the area of the apparatus.

## 6.2 Test enclosure

The test enclosure shall consist of either a room with a volume greater than 20 m<sup>3</sup> (which contains adequate oxygen for testing) or a smaller enclosure with a through flow of air. Inlet and extraction systems providing an air flow rate of less than 0,2 m/s in the locality of the rig provide adequate oxygen without disturbing the burning behaviour.

## 6.3 Clock

The clock shall be capable of measuring to at least 1 h with an accuracy of 1 s.

## 6.4 Ignition source smouldering cigarette

An un-tipped cylindrical cigarette complying with the following requirements shall be used:

- length:  $(68 \pm 2)$  mm;
- diameter:  $(8 \pm 0,5)$  mm;
- mass:  $(0,95 \pm 0,1)$  g.

The smouldering rate shall be  $(8 \pm 2)$  min/40 mm, when tested as follows.

Mark the cigarette, conditioned as described in 7.2 at 10 mm and 50 mm from the end to be lit. Light it as described in 9.2.1 and impale it horizontally in air (air flow rate less than 0,2 m/s) on a horizontal wire spike inserted not more than 13 mm into the unlit end. Record the time taken to smoulder from the 10 mm to the 50 mm mark.

The smouldering rate may be measured on two cigarettes at the same time. The distance between cigarettes and between each cigarette and any nearby surface such as the wall or floor of the test enclosure shall be at least 150 mm.