
Pohištvo - Ugotavljanje vžigljiivosti posteljnih vložkov in oblazinjenih podnožij - 1.
del: Vir vžiga: tleča cigareta

Furniture - Assessment of the ignitability of mattresses and upholstered bed bases - Part
1: Ignition source: Smouldering cigarette

Möbel - Bewertung der Entzündbarkeit von Matratzen und gepolsterten Bettböden - Teil
1: Zündquelle: Glimmende Zigarette

Ameublement - Evaluation de l'allumabilité des matelas et des sommiers rembourrés -
Partie 1: Source d'allumage: Cigarette en combustion

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English version

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mattresses and upholstered bed bases - Part 1:
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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents	Page
Foreword	3
0 Introduction	3
1 Scope	3
2 Definitions	3
2.1 progressive smouldering	4
2.2 flaming	4
2.3 flammability	4
2.4 ignitability	4
2.5 ignition source	4
2.6 mattress pad	4
2.7 mattress	4
2.8 bed base	4
2.9 upper surface	4
3 Criteria of ignition	4
3.1 Progressive smouldering ignition	4
3.2 Flaming ignition	5
4 Principle	5
5 Health and safety of operators	5
5.1 General	5
5.2 Enclosure	5
5.3 Extinguishers	5
6 Apparatus	6
6.1 Test rig	6
6.2 Test enclosure	6
6.3 Clock	7
6.4 Ignition source : smouldering cigarette	7
6.5 Dimensional measurements	7
7 Atmospheres for conditioning and testing	7
7.1 Conditioning	7
7.2 Testing	7
8 Test specimen	7
8.1 Small scale	7
8.2 Full size	8
9 Test procedure	8
9.1 Preparation	8
9.2 Ignition source application	8
9.3 Final examination	9
10 Test report	9
Annex A (informative)	
Model report form	10

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Foreword

This European Standard was issued by the Technical Committee CEN/TC 207 "Furniture" of which the secretariat is held by IBN.

The text is based on EN 1021-1 "Furniture - Assessment of the ignitability for upholstered furniture - Part 1: Ignition source : smouldering cigarette".

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of an identical text or by endorsement, at the latest by May 1995, and conflicting national standards shall be withdrawn at the latest by May 1995.

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

0 Introduction

This standard is one of a series of standards concerned with the ignitability of mattresses and upholstered bed bases using different ignition sources. The ignition source used in this standard is a smouldering cigarette.

When mattresses or bed bases are used or stored on their own, it is necessary and desirable to know their ignitability in their own right.

It cannot be assumed that protection against flaming sources will automatically give protection against smouldering ignition. Users of the standard should therefore recognize the need to submit test specimens to both cigarette tests and flaming ignition tests.

WARNING

Attention is drawn to the fact that the tests given in this standard relate to the ignitability of the materials described in the test report (see clause 10) and are not intended to reproduce the full fire hazards that may be encountered.

1 Scope

This standard lays down a test method to assess the ignitability of mattresses, upholstered bed bases or mattress pads when subjected to a smouldering ignition cigarette.

Air mattresses and water beds are excluded from this standard.

2 Definitions

For the purposes of this Standard, the following 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 flammability

The ability of a material or product to burn with a flame under specified test conditions.

2.4 ignitability

A measure of the ease with which a material, product or component can be ignited so as to flame or progressively smoulder.

2.5 ignition source

Source of energy used to ignite combustible materials or products.

2.6 mattress pad

An upholstered product, in some cases used in conjunction with, and to complement, a mattress or upholstered bed base. This product is not intended to be used separately.

2.7 mattress

An upholstered product intended for sleeping upon.

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2.8 bed base

A structure which supports the mattress or mattress pad.

2.9 upper surface

The surface of a bed base that supports a mattress or the surface(s) of a mattress that support(s) a user.

3 Criteria of ignition

3.1 Progressive smouldering ignition

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

- a) any test specimen that displays escalating combustion behaviour so that it is unsafe to continue the test and active extinction is necessary ;
- b) any test specimen that smoulders until it is essentially consumed within the test duration ;

- c) any test specimen that smoulders to its full thickness, within the duration of the test ;
- d) any test specimen that smoulders for more than one hour ;
- e) any test specimen that, on final examination (see 9.3), shows evidence of charring other than discolouration more than 50 mm in any horizontal direction from the nearest point of the original position of the source.

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 part of the standard, a flaming ignition is considered to be the occurrence of any flames initiated by a progressive smouldering source.

4 Principle

To subject a full upper surface or upper surface characteristic features of the mattress, the bed base or the mattress pad to the contact of smouldering cigarettes by disposing the cigarettes so that all the zones having different characteristics are tested.

5 Health and safety of operators

5.1 General

The test method specified in this standard presents a considerable hazard; suitable precautions shall be taken, which may include the provision of breathing apparatus and protective clothing.

5.2 Enclosure

For safety, the tests should be conducted in a suitable fume cupboard or purpose built room, in accordance with 6.2, so that individuals are not exposed to any 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 fire extinguishers (water and halogenated hydrocarbons), 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

Consisting of a platform of expanded steel or open mesh of at least 450 mm x 450 mm supported at least 75 mm above a solid base (a suitable test rig mesh is illustrated in figure 1). The size of the mesh is not critical.

For the tests, the rig is sited within the enclosure (see 6.2.) and the testing is performed in a substantially draught-free environment permitting an adequate supply of air.

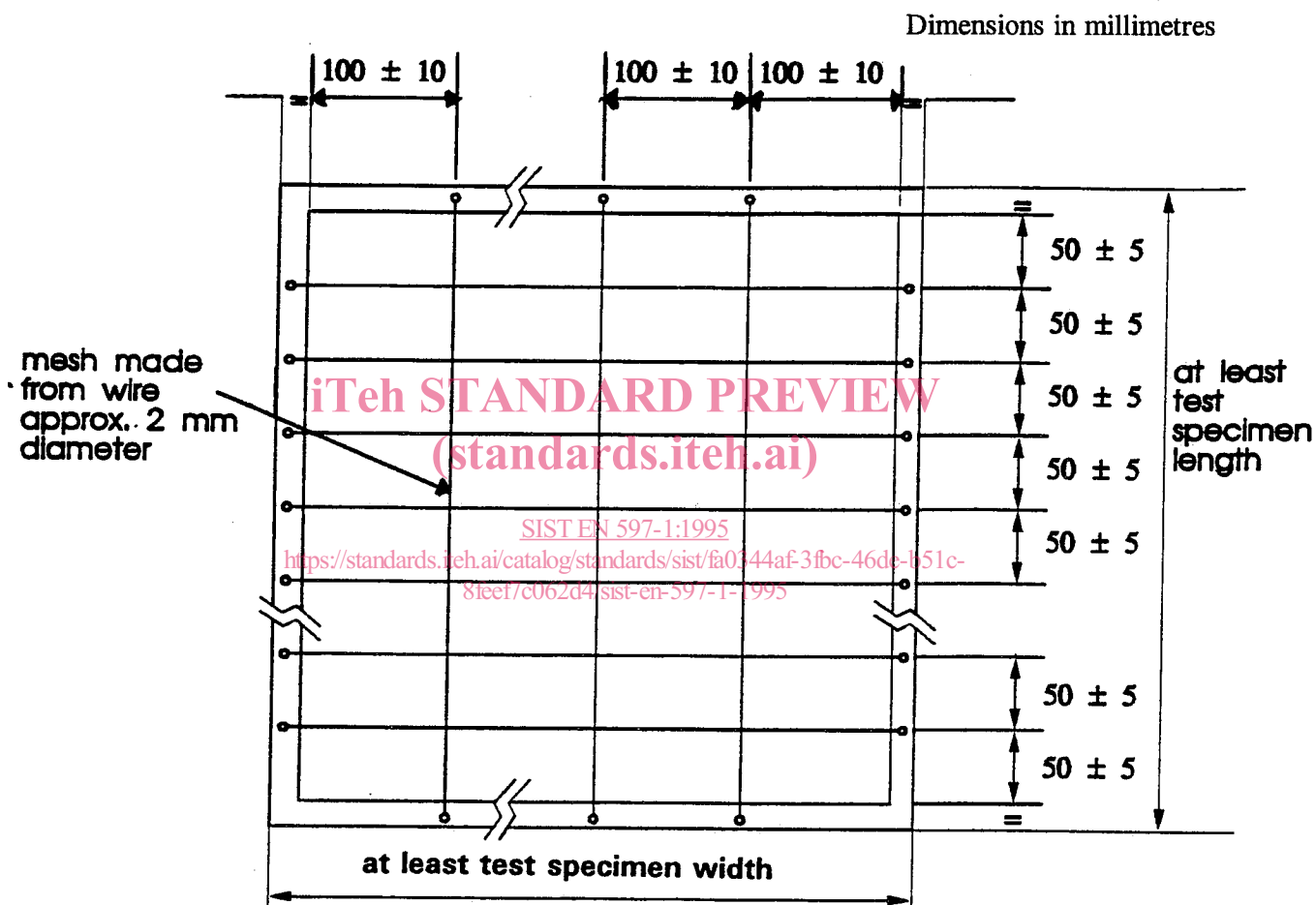


Figure 1 - Test rig mesh
Spacing of wire mesh platform

6.2 Test enclosure

The test enclosure shall consist of either a room with a volume greater than 20 m³, (which contains adequate oxygen for testing) or a smaller enclosure with a through flow of air. Inlet and extraction systems, providing air flow rates < 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 untipped cylindrical cigarette complying with the following requirements shall be used:

- length : (70 ± 4) mm,
- diameter : $(8 \pm 0,5)$ mm,
- mass : $(1 \pm 0,1)$ g.

The smouldering rate shall be $(12,0 \pm 3,0)$ min/50 mm, when tested as follows. Mark the cigarette, conditioned as described in 7.1 at 5 mm and 55 mm from the end to be lit. Light it, as described in 9.2, and impale it horizontally in air flow (draught $< 0,2$ 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 5 mm to the 55 mm mark.

6.5 Dimensional measurements

All dimensional measurements shall be given with an accuracy of ± 1 mm.

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7 Atmospheres for conditioning and testing

7.1 Conditioning

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The materials to be tested and the cigarettes shall be conditioned for at least 16 h immediately before the test in the following atmosphere:

- temperature: $(23 \pm 2)^{\circ}\text{C}$
- relative humidity: $(50 \pm 5)\%$.

7.2 Testing

The test shall be carried out in an atmosphere having a temperature between 10°C and 30°C and a relative humidity between 15 % and 80 %.

8 Test specimen

The test specimen shall be representative of the components and make-up of the finished mattress, mattress pad or upholstered bed base.

If the two surfaces are different in any way, then both sides must be tested.

8.1 Small scale

For small scale tests, the test specimen shall be rectangular in shape and of a minimum size 450 mm x 350 mm x nominal thickness of the finished mattress, mattress pad or upholstered bed base. The