

INTERNATIONAL
STANDARD

ISO
12952-2

Second edition
2010-10-01

**Textiles — Assessment of the ignitability
of bedding items —**

**Part 2:
Ignition source: match-flame equivalent**

Textiles — Évaluation de l'allumabilité des articles de literie —

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Contents

	Page
Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references.....	1
3 Terms and definitions	2
4 Principle.....	2
5 Criteria of ignition.....	2
6 Health and safety of operators.....	3
7 Apparatus	3
8 Cleansing.....	5
9 Atmospheres for conditioning and testing	5
10 Test specimens.....	6
11 Test procedures.....	6
12 Final examination <i>(standards.iteh.ai)</i>	10
13 Test report.....	10
Annex A (informative) Recommended gas flow control	11
ISO 12952-2:2010 https://standards.iteh.ai/catalog/standards/sist/48b58559-8a67-485e-b427-cb76a4ae2297/iso-12952-2-2010	

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 12952-2 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in collaboration with Technical Committee ISO/TC 38, *Textiles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces ISO 12952-3:1998 and ISO 12952-4:1998, which have been technically revised.

ISO 12952 consists of the following parts, under the general title *Textiles — Assessment of the ignitability of bedding items*:
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- *Part 1: Ignition source: smouldering cigarette*
- *Part 2: Ignition source: match-flame equivalent*

Introduction

Fires are sometimes caused by the ignition of bedding items by smokers' materials. The ignitability of bedding items by a smouldering cigarette or a small open flame is therefore an important feature in the assessment of the risk of fire.

It cannot be assumed that protection against a smouldering ignition source will automatically give protection against flaming ignition. Users of this part of ISO 12952 should therefore consider the need to submit test specimens to both cigarette and flaming ignition tests.

This part of ISO 12952 describes test methods with a match-flame equivalent as the ignition source. Testing against the ignition source of a smouldering cigarette is covered in ISO 12952-1.

This part of ISO 12952 can be used for the assessment of ignitability of individual items of bedding and of composite arrangements.

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[ISO 12952-2:2010](#)

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Textiles — Assessment of the ignitability of bedding items —

Part 2: Ignition source: match-flame equivalent

WARNING — This test relates only to the ignitability of materials under the particular conditions of testing. It is not intended as a means of assessing the full potential fire hazard of the bedding item in use. Particular attention is drawn to the possibility of ignition of lower parts of a bedding assembly when using bedding items which are not themselves ignited. The performance of beds and mattresses requires reference to testing and performance standards other than those described in this part of ISO 12952.

1 Scope

This part of ISO 12952 specifies tests for assessing the ignitability of all bedding items when subjected to a match-flame equivalent.

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This part of ISO 12952 applies to bedding items, which can normally be placed on a mattress, for example:

- mattress covers;
- underlays; [ISO 12952-2:2010
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- incontinence sheets and pads; [cb76a4ae2297/iso-12952-2-2010](https://standards.iteh.ai/catalog/standards/sist/48b58559-8a67-485e-b427-cb76a4ae2297/iso-12952-2-2010)
- sheets;
- blankets;
- electric blankets;
- quilts (duvets) and covers;
- pillows (whatever the filling) and bolsters;
- pillowcases.

This part of ISO 12952 does not apply to mattresses, bed bases and mattress pads.

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.

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 3175-3, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 3: Procedure for testing performance when cleaning and finishing using hydrocarbon solvents*

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 4880, *Burning behaviour of textiles and textile products — Vocabulary*

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

ISO 10528, *Textiles — Commercial laundering procedure for textile fabrics prior to flammability testing*

ISO 12952-1, *Textiles — Assessment of the ignitability of bedding items — Part 1: Ignition source: smouldering cigarette*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4880 and in ISO 12952-1 apply.

4 Principle

A test specimen placed on a testing substrate is subjected to a small open flame placed on top of and/or below the test specimen. Any progressive smouldering and/or flaming is noted.

Where the actual mattress used is known, it can replace the testing substrate.

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5.1 Progressive smouldering ignition [ISO 12952-2:2010](#)

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All the types of behaviour given in a) to d) are considered to be progressive smouldering ignition:

- a) any test specimen that displays escalating combustion behaviour, making it unsafe to continue the test, and that requires forcible extinction;
- b) any test specimen that smoulders until it is consumed, within a period of 15 min following the removal of the ignition source;
- c) any test specimen that produces externally detectable amounts of smoke, heat or glowing, after a period of 15 min following the removal of the ignition source;
- d) any test specimen that, on final examination (see Clause 12), shows evidence of active smouldering.

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

5.2 Flaming ignition

The following types of behaviour are considered to be flaming ignition:

- a) any test specimen that displays escalating combustion behaviour, making it unsafe to continue the test, and that requires forcible extinction;
- b) any test assembly that burns until it is consumed within the test duration;
- c) any test specimen that continues to flame for more than 120 s after removal of the ignition source.

6 Health and safety of operators

WARNING — There is a considerable risk with these tests and it is essential that suitable precautions be taken, which may include the provision of breathing apparatus and protective clothing.

In the interest of safety, the tests shall be conducted in a suitable fume cupboard or purpose-built room, so that individuals are not exposed to fumes (see 7.4).

Readily accessible suitable means of extinguishing the test specimens shall be provided. Extinction of test specimens can be difficult and care should be taken to dispose of them only when they are completely inert. It can be necessary to immerse smouldering specimens in water or place them in a sealed non-combustible enclosure. To ensure complete safety, other suitable steps can be required.

7 Apparatus

7.1 Test rig

A suitable test rig is illustrated in Figure 1. It consists of a platform of open mesh of at least 450 mm × 450 mm, supported by a solid base. The test rig shall correspond to the dimensions of the test specimen, but can be larger than the test specimen.

The size of the mesh and the angle iron dimensions given in Figure 1 are not critical.

For the tests, the rig is placed within the test enclosure (see 7.4).

7.2 Stopwatch

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A stopwatch shall be used, capable of reading to the nearest second and measuring for at least 1 h.

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7.3 Ignition source: butane-gas flame

A burner tube made of stainless steel, of $(8,0 \pm 0,1)$ mm outside diameter, $(6,5 \pm 0,1)$ mm internal diameter and (200 ± 5) mm in length, is connected by flexible tubing, via a flowmeter, fine-control valve, on-off valve and cylinder regulator providing a nominal outlet pressure of 2,8 kPa¹, to a cylinder providing commercial butane.

The flowmeter shall be calibrated to supply a nominal butane-gas flow rate at 25 °C of (45 ± 1) ml/min. The flexible tubing connecting the output of the flowmeter to the burner tube shall be 2,5 m to 3 m in length (see also Annex A).

NOTE Under these conditions, the flame height is approximately 35 mm.

7.4 Test enclosure

A suitable room with a volume greater than 20 m³, which contains adequate oxygen for testing, or a smaller enclosure with a through-flow of air equipped with inlet and extraction systems shall be used. Air flow rates shall not exceed 0,2 m/s in the locality of the test specimen position. This limit provides adequate oxygen without disturbing the burning behaviour.

1) 1 kPa = 1 000 N/m² = 10 mbar.