SLOVENSKI STANDARD
oSIST prEN ISO 11925-2:2018

01-december-2018

Preskusi odziva na ogenj - Sposobnost vžiga gradbenih proizvodov v neposrednem stiku s plamenom - 2. del: Preskus z enim gorilnikom (ISO/DIS 11925 -2:2018)

Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO/DIS 11925-2:2018)

Prüfungen zum Brandverhalten - Entzündbarkeit von Produkten bei direkter Flammeneinwirkung - Teil 2: Einzelflammentest (ISO/DIS 11925-2:2018)

Essais de réaction au feu - Allumabilité de produits soumis à l'incidence directe de la flamme - Partie 2: Essai à l'aide d'une source à flamme unique (ISO/DIS 11925-2:2018)

Ta slovenski standard je istoveten z: **prEN ISO 11925-2**

ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements

oSIST prEN ISO 11925-2:2018 **en**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 11925-2

ISO/TC **92**/SC **1** Secretariat: **BSI**

Voting begins on: **2018-09-26**

Voting terminates on: **2018-12-19**

Reaction to fire tests — Ignitability of products subjected to direct impingement of flame —

Part 2: Single-flame source test

Essais de réaction au feu — Allumabilité de produits soumis à l'incidence directe de la flamme — Partie 2: Essai à l'aide d'une source à flamme unique

ICS: 13.220.50

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 11925-2:2018(E)

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Published in Switzerland

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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 11925-2 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth*.

This edition cancels and replaces the previous edition (ISO 11925-2:2010), which has been technically revised.

ISO 11925 consists of the following parts, under the general title *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame*:

— *Part 1: Guidance on ignitability* [Technical Report]

— *Part 2: Single-flame source test*

— *Part 3: Multi-source test*

Introduction

This fire test method has been developed to define reaction to fire performance of products. The method specifies a test for determining the ignitability of products by direct small-flame impingement under zero impressed irradiance using vertically oriented test specimens.

Although the method is designed to assess ignitability, this is addressed by measuring the spread of a small flame up the vertical surface of a specimen following application of a small (match-sized) flame to either the surface or edge of a specimen for either 15 s or 30 s. The determination of the production of flaming droplets depends on whether or not the filter paper placed beneath the specimen ignites.

Reaction to fire tests — Ignitability of products subjected to direct impingement of flame —

Part 2: Single-flame source test

WARNING — The attention of all persons concerned with managing and carrying out this test is drawn to the fact that fire testing can be hazardous and that there is a possibility that toxic and/or harmful smoke and gases can be evolved during the test. Operational hazards can also arise during the testing of specimens and the disposal of test residues.

WARNING — An assessment of all potential hazards and risks to health should be made and safety precautions identified and provided. Written safety instructions should be issued. Appropriate training should be given to relevant personnel. Laboratory personnel should ensure that they follow written safety instructions at all times.

WARNING — Adequate means of extinguishing the specimen should be provided, bearing in mind that some specimens can produce severe flaming during the test. A hand water spray or an inert gas suppression system, e.g. compressed nitrogen, which can be directed to the burning area, should be available together with other means, such as fire extinguishers.

WARNING — In some cases, smouldering can be difficult to extinguish completely and immersion in water can be necessary.

1 Scope

This part of ISO 11925 specifies a method of test for determining the ignitability of products by direct small flame impingement under zero impressed irradiance using vertically oriented test specimens.

Information on the precision of the test method is given in Annex A.

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 13238, *Reaction to fire tests for building products — Conditioning procedures and general rules for selection of substrates*

ISO 13943, *Fire safety — Vocabulary*

ISO 14697, *Reaction-to-fire tests — Guidance on the choice of substrates for building and transport products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13943 and the following apply.

3.1
product
material, element or component about which information is required

3.2
essentially flat product
product having one of the following characteristics:

a) a planar exposed surface;

b) a planar exposed surface with a surface irregularity that is evenly distributed over the exposed surface, provided that

— at least 50 % of the surface of a representative square area of 250 mm × 250 mm lies within a depth of 6 mm from a plane taken across the highest points on the exposed surface, or

— for a surface containing cracks, fissures or holes, these do not exceed 6,5 mm in width or 10 mm in depth, and that the total area of such cracks, fissures or holes at the surface does not exceed 30 % of a representative square area of 250 mm × 250 mm of the exposed surface

3.3
flaming droplets flaming particle
material separating from the specimen during the fire test procedure and igniting the filter paper beneath the specimen

3.4
multi-layered products
Product composed of two or more layers of different materials, which can be either substantial and non-substantial (**EN 13501-1**).

3.5
sustained flaming
persistence of flame for a period greater than 3 s

3.6
ignition
presence of sustained flaming

4 Test apparatus

4.1 Test room, capable of providing an environment at (23 ± 5) °C and a relative humidity of (50 ± 20) %.

NOTE It has been found that a partially darkened room assists with the perception of small surface flames.

4.2 Combustion chamber, consisting of an enclosure constructed from stainless steel sheets, with heat-resistant, glazed doors provided for access and observation in at least the front and one lateral side (see Figure 1). Ventilation of the enclosure shall be free through the square box section base in the bottom of the chamber. This shall be made of stainless steel of 1,5 mm thickness, 50 mm in height, with the open square area being 25 mm × 25 mm. To make free ventilation possible, the chamber shall stand on 40 mm high supports which provide a gap on the lateral sides of the combustion chamber. The air velocity measured on the central axis in the chimney of the combustion chamber shall be (0,7 ± 0,1) m/s, measured with the burner only ignited and with the ventilation hood "on". The combustion chamber shall be situated under a suitably ventilated hood.

4.3 Ignition source, consisting of burner constructed as shown in Figure 2 and designed so that it can be used vertically or be tilted at 45° with respect to the vertical axis. The burner shall be mounted onto a horizontal plate so that it moves smoothly forwards and backwards in a horizontal plane along the centreline of the combustion chamber.

The burner shall be fitted with a fine adjustment valve to ensure accurate control of the flame height.

4.4 Fuel, consisting of commercial propane of 95 % minimum purity. In order to obtain flame stability with the burner tilted at 45°, the gas pressure shall be between 10 kPa and 50 kPa.

4.5 Specimen holder, consisting of two stainless steel U-shaped frames. The thickness of the frames shall be (5 ± 1) mm. The dimensions of the frame shall be as shown in Figure 3 a). The frame shall hang vertically from the support (see 4.6 and Figure 4) such that the underside of the specimen is exposed directly to the flame along its centreline and edges (see Figures 5 to 7). The two halves of the specimen holder shall be held together by screws or clamps to prevent the specimen warping.

It is important that the technique of clamping used be capable of restraining the specimen for the total duration of the test.

NOTE Small pins of approximately 1 mm in length incorporated on the surface of the frame to which the specimen is attached have been found suitable.

For multilayered products, a typical test frame as shown in Figure 3 b) shall be used when carrying out the prescribed additional set of tests on multilayer test specimens of thickness greater than 10 mm according to 7.3.3.2.3.

For the mounting and fixing of loose fill material, the following applies.

c) A specimen holder as shown in Figure 3 c) shall be used.

d) When making the specimens for testing, the surface of the loose fill material specimen shall be as even as possible.

e) A wire lacing shall be used to retain the specimen if material falls from the specimen holder. 0,2 mm wire shall be used to form 11 rows vertically in front of the opening to hold the loose fill material in place. The wire lacing will have the shape of a harp.

f) If the material is a mixture of various grain sizes, the release of smaller particles from the open central surface does not justify the use of the harp.

g) It is deemed sufficient to carry out the tests with a surface flame attack. Edge flame attack tests are not necessary.

4.6 Support, consisting of a vertical stand to which the specimen holder is attached such that it hangs vertically and exposes its open edge containing the specimen to the burner flame (see Figure 4).

The distance between the underside of the specimen and the top of horizontal plate above the metal grid shall be (125 ± 10) mm for edge flame impingement and (85 ± 10) mm for surface flame impingement.

4.7 Timing device, capable of recording elapsed time to the nearest second and which shall be accurate to within 5 s in 1 h.

4.8 Template, consisting of one metal plate ($250^{\ 0}$) mm long and ($90^{\ 0}$) mm wide.

4.9 Flame checking devices

4.9.1 Flame-height measuring device, capable of indicating a flame height of 20 mm (see Figure 8) when located against a fixed point of the burner. The tolerance on the flame-height measuring device shall be ±0,1 mm.

The flame height shall be measured from the upper edge of the burner to the yellow tip of the flame. This check shall be conducted before testing each specimen.

4.9.2 Burner spacer for edge flame impingement, removable, 16 mm long, which can be mounted at the burner orifice to check the distance from the pre-set flame contact point on the specimen (see Figure 9).