International Standard

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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

Reference number
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Foreword

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This document was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 127, *Fire safety in buildings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 11925-2:2020), which has been technically revised.

The main changes are as follows:

— note on the evaluation of the flame tip;

— revision of all figures.

A list of all parts in the ISO 11925 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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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 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/particles depends on whether the filter paper placed beneath the specimen ignites.

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

Details on testing not essentially flat end-use products is given in Annex B.

Details on testing perforated end-use products is given in Annex C.

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

Part 2:
Single-flame source test

1 Scope

This document 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.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13943, *Fire safety — Vocabulary*

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

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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

[SOURCE: ISO 1716:2018, 3.1]

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

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— 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 droplet/particle
material separating from the specimen during the fire test procedure and igniting the filter paper beneath the specimen

3.4
multi-layered product
product composed of two or more layers of different materials, which can be either substantial and/or non-substantial

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. The frame shall hang vertically from the support (see 4.6 and Figure 7) such that the underside of the specimen is exposed directly to the

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