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Plastics — Vertical flame spread determination for film and sheet

Plastiques — Détermination de la propagation verticale de la flamme sur films et feuilles

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 4, *Burning behaviour*.

This second edition cancels and replaces the first edition (ISO 12992:1995), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Clause 2 has been updated;

— Clause 3 has been updated;

— the precision data have been moved to Annex A.

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Introduction

Thin flexible plastic films and sheets are widely used in products for packaging, building, housing, industries and transport media, in various applications. The burning behaviour, in particular, the vertical flame spread of flexible plastic films and sheet, is a concern for fire safety of these applications. This document gives a method of determination of vertical flame spread of flexible plastic films and sheets by small flame source.

This document is also intended as a pre-selection test for materials used for parts in devices and appliances. The final acceptance of the material would be dependent upon its use in complete equipment that conforms with the standards applicable to such equipment.

It should be noted that the test results obtained alone by the test specified in this document cannot give whole aspects of fire hazard of plastics films and sheets.

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Plastics — Vertical flame spread determination for film and sheet

1 Scope

This document specifies a test method for measurement of flame spread properties of vertically oriented specimens of plastics in the form of film and sheet, 3 mm or less thickness, subjected to a small igniting flame.

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 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test*

ISO 13943, *Fire safety —Vocabulary*

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:

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

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

3.1
afterglow
persistence of glowing combustion after both removal of the ignition source and the cessation of any flaming combustion

[SOURCE: ISO 13943:2008, definition 4.8]

3.2
flame-spread time
time taken by a flame front on a burning material to travel a specified distance on the surface, or to cover a specified surface area under specified conditions

[SOURCE: ISO 13943:2008, definition 4.144]

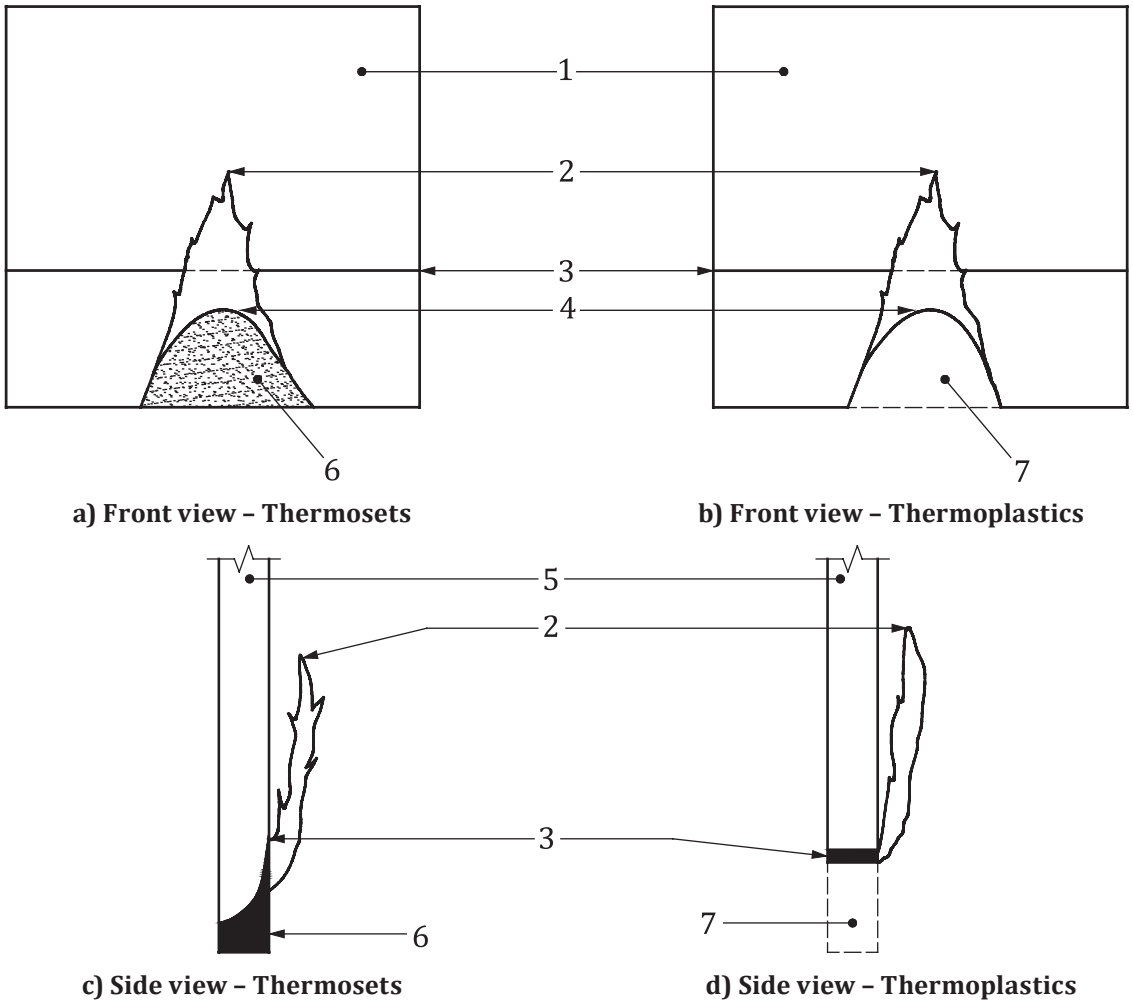
3.3
flaming droplet
molten material separating from a burning item and continuing to flame during a fire or fire test

[SOURCE: ISO 13943:2008, definition 4.150]

3.4
seat of flame
flame location at the leading edge of the affected area

Note 1 to entry: See Figure 1.

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a) Front view – Thermosets **b) Front view – Thermoplastics**

c) Side view – Thermosets **d) Side view – Thermoplastics**

Key

1 test specimen
2 top of flame
3 marker line
4 seat of flame
5 test specimen cross section
6 burnt area
7 shrunk area

Figure 1 — Identification of seat of flame

4 Significance of the test

4.1 Results obtained using the method described in this document can provide a sensitive measure of the burning characteristics of material under certain controlled laboratory conditions, and hence, may be useful for preselection or quality control purposes.

4.2 Results obtained from specimens of differing thickness, with different ignition sources and/or by different procedures are not comparable. Correlation with flammability behaviour under other fire conditions is not implied.

4.3 This test is not relevant for specimens which distort away from and out of reach of the test flame without ignition. Other test methods should be explored for such specimens.

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