

Methods of testing

Plastics —

Part 1: Thermal properties —

Method 140A: Determination of the burning behaviour of horizontal and vertical specimens in contact with a small-flame ignition source

IMPORTANT NOTE. Before reading this method it is essential to read BS 2782-0, Introduction, issued separately.

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Plastics and Rubber Standards Policy Committee (PRM/-) to Technical Committee PRM/21, upon which the following bodies were represented:

- British Plastics Federation
- British Textile Confederation
- Department of the Environment (Building Research Establishment)
- Department of Trade and Industry (National Physical Laboratory)
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- Electrical and Electronic Insulation Association (BEAMA Ltd.)
- GAMBICA (BEAMA Ltd.)
- Ministry of Defence
- Packaging and Industrial Films Association
- Plastics and Rubber Institute
- Pira International
- RAPRA Technology Ltd.
- Yarsley Technical Centre Ltd.

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National foreword

This British Standard has been prepared under the direction of the Plastics and Rubber Standards Policy Committee and is identical with ISO 1210:1992 *Plastics — Determination of the burning behaviour of horizontal and vertical specimens in contact with a small-flame ignition source*, published by the International Organization for Standardization (ISO).

Cross-references

International standard	Corresponding British Standard
ISO 291:1977	BS 2782 <i>Methods of testing plastics</i> Part 0:1992 <i>Introduction</i> (Appendix A is identical)
ISO 293:1986	Method 901A:1988 <i>Compression moulding test specimens of thermoplastic materials</i> (Identical)
ISO 294:1975	Method 910A:1977 <i>Injection moulding test specimens of thermoplastic materials</i> (Identical)
ISO 295:1991	Method 902A:1992 <i>Compression moulding of test specimens of thermosetting materials</i> (Identical)
ISO 845:1988	BS 4370 <i>Methods of test for rigid cellular materials</i> Part 1:1988 <i>Methods 1 to 5</i> (Method 2 is technically equivalent)
ISO 1043-1:1987	BS 3502 <i>Symbols for plastics and rubber materials</i> Part 1:1991 <i>Schedule for symbols for plastics</i> (Identical)
ISO 5725:1986	BS 5497 <i>Precision of test methods</i> Part 1:1987 <i>Guide for the determination of repeatability and reproducibility for a standard test method by interlaboratory tests</i> (Identical)

The Technical Committee has reviewed the provisions of the draft of ISO 10093 to which reference is made in the text and has decided to include the relevant part of the specification as National annex NA.

WARNING NOTE. This British Standard, which is identical with ISO 1210, does not necessarily detail all the precautions necessary to meet the requirements of the Health and Safety at Work etc. Act 1974. Attention should be paid to any appropriate safety precautions and the method should be operated only by trained personnel.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

1.1 This International Standard specifies a small-scale laboratory screening procedure for comparing the relative burning behaviour of vertically or horizontally oriented plastic specimens exposed to a small-flame ignition source.

1.2 This method of test determines the afterflame/afterglow times and damaged length of specimens. It is applicable to solid and cellular materials having an apparent density of not less than 250 kg/m³, determined in accordance with ISO 845. This method is not applicable to materials that shrink away from the applied flame without igniting.

1.3 The classification system described in Annex A is intended for quality assurance and the preselection of component materials for products. This system is not intended for assessment of the fire behaviour of building materials or furnishings. The method of test described may be used for the preselection acceptance of a material, providing positive results are obtained at the thickness equal to the smallest thickness used in the application.

NOTE 1 Test results are influenced by material components, e.g. pigments, fillers and fire-retardants, and properties such as the direction of anisotropy and molecular mass.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 291:1977, *Plastics — Standard atmospheres for conditioning and testing*.

ISO 293:1986, *Plastics — Compression moulding test specimens of thermoplastic materials*.

ISO 294:1975, *Plastics — Injection moulding test specimens of thermoplastic materials*.

ISO 295:1991, *Plastics — Compression moulding of test specimens of thermosetting materials*.

ISO 845:1988, *Cellular plastics and rubbers — Determination of apparent (bulk) density*.

ISO 1043-1:1987, *Plastics — Symbols — Part 1: Basic polymers and their special characteristics*.

ISO 5725:1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests*.

ISO 10093:¹⁾, *Plastics — Fire tests — Standard ignition sources*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 afterflame

persistence of flaming of a material, under specified test conditions, after the ignition source has been removed

3.2 afterflame time

the length of time for which a material continues to flame, under specified test conditions, after the ignition source has been removed

3.3 afterglow

persistence of glowing of a material, under specified test conditions, after cessation of flaming or, if no flaming occurs, after removal of the ignition source

3.4 afterglow time

the time during which a material continues to glow, under specified test conditions, after cessation of flaming or after the ignition source has been removed

4 Principle

A test specimen bar is supported horizontally or vertically by one end and the free end is exposed to a specified gas flame. The burning behaviour of the bar is assessed by measuring the linear burning rate (method A) or the afterflame/afterglow times (method B).

5 Significance of test

5.1 Tests made on a material under the conditions specified can be of considerable value in comparing the relative burning behaviour of different materials, in controlling manufacturing processes, or in assessing any change in burning characteristics prior to, or during use. The results obtained from this method are dependent on the shape, orientation and environment surrounding the specimen and on the conditions of ignition. Correlation with performance under actual service conditions is not implied.

¹⁾ To be published.