BS ISO 5660-1:2015

BSI Standards Publication

Reaction-to-fire tests — Heat release, smoke production and mass loss rate

Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)

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National foreword

This British Standard is the UK implementation of ISO 5660-1:2015. It supersedes BS 476-15:1993, ISO 5660-1:1993 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee FSH/21/-/5, Reaction to fire tests - Heat release and smoke measurement.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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INTERNATIONAL STANDARD

ISO 5660-1

Third edition
2015-03-15

Reaction-to-fire tests — Heat release, smoke production and mass loss rate —

Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)

Essais de réaction au feu — Débit calorifique, taux de dégagement de fumée et taux de perte de masse —

Partie 1: Débit calorifique (méthode au calorimètre à cône) et taux de dégagement de fumée (mesurage dynamique)

Reference number
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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth*.

This third edition of ISO 5660-1 cancels and replaces ISO 5660-1:2002 (second edition) and ISO 5660-2:2002 (first edition), which have been technically revised and merged.

ISO 5660 consists of the following parts, under the general title *Reaction-to-fire tests — Heat release, smoke production and mass loss rate*:

— *Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)*

— *Part 3: Guidance on measurement* [Technical Specification]

The following part is under preparation:

— *Part 4: Measurement of heat release for determination of low levels of combustibility.*

INTERNATIONAL STANDARD ISO 5660-1:2015(E)

Reaction-to-fire tests — Heat release, smoke production and mass loss rate —

Part 1:
Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)

1 Scope

This part of ISO 5660 specifies a method for assessing the heat release rate and dynamic smoke production rate of specimens exposed in the horizontal orientation to controlled levels of irradiance with an external igniter. The heat release rate is determined by measurement of the oxygen consumption derived from the oxygen concentration and the flow rate in the combustion product stream. The time to ignition (sustained flaming) is also measured in this test.

The dynamic smoke production rate is calculated from measurement of the attenuation of a laser light beam by the combustion product stream. Smoke obscuration is recorded for the entire test, regardless of whether the specimen is flaming or not.

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 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 13943, *Fire safety — Vocabulary*

ISO 14697, *Fire tests — Guidance on the choice of substrates for building products*

3 Terms and definitions

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

3.1
essentially flat surface
surface whose irregularity from a plane does not exceed ± 1 mm

3.2
flashing
existence of flame on or over the surface of the specimen for periods of less than 1 s

3.3
ignition
onset of sustained flaming as defined in 3.10