



BSI Standards Publication

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

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Part 5: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement) under reduced oxygen atmospheres

## National foreword

This Published Document is the UK implementation of ISO/TS 5660-5:2020.

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

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**Reaction-to-fire tests — Heat release,  
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rate —**

Part 5:

**Heat release rate (cone calorimeter  
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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](http://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](http://www.iso.org/patents)).

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

For an explanation of the voluntary nature of standards, 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

A list of all parts in the ISO 5660 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](http://www.iso.org/members.html).

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

## Part 5:

# Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement) under reduced oxygen atmospheres

## 1 Scope

This document specifies the apparatus and procedure for measuring reaction to fire behaviour under reduced oxygen atmospheres. Continuous measurements are made to calculate heat release rates, smoke and specific gas production rates, and mass loss rates. Ignition time measurements are also made and ignition behaviour is obtained. Pyrolysis parameters of specimens exposed to controlled levels of irradiance and controlled levels of oxygen supply can be determined as well.

Different reduced oxygen atmospheres in the test environment are achieved by controlling the oxygen volume concentration of input gas fed into the chamber (vitiation) or by controlling the total volume of atmosphere fed into the chamber (ventilation). Ranges of oxygen volume concentration below 20,95 % of oxygen can be studied. The apparatus is not intended to control enriched oxygen conditions above atmospheric 20,95 % oxygen concentration.

The measurement system prescribed in this document is based on the cone calorimeter apparatus described in ISO 5660-1. Therefore, this document is intended to be used in conjunction with ISO 5660-1.

## 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 5660-1:2015, *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)*

ISO 13927:2015, *Plastics — Simple heat release test using a conical radiant heater and a thermopile detector*

ISO 13943, *Fire safety — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5660-1, 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 <http://www.electropedia.org/>