TECHNICAL REPORT

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Fire tests — Applicability of reaction to fire tests to fire modelling and fire safety engineering

Essais au feu — Applicabilité des résultats de l'essai de réaction au feu aux techniques de modélisation et de sécurité contre l'incendie

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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).

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.

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

This second edition cancels and replaces the first edition (ISO/TR 17252:2008), which has been technically revised. The main changes compared with the previous edition are as follows:

— The title of Clause 5 was changed;

— Former subclauses 5.1.1 and 5.1.2 have been merged into 5.1;

— New subclause 5.2 has been added: “Quantitative definition of fires and fire scenarios”;

— Clause 6 has been re-written, the title has been changed to “Sources and types of input data for fire safety engineering”, subclauses 6.2 and 6.3 have been added;

— Clause 7 has been re-written, the subclauses have been re-arranged and text has been added;

— Clause 8 has been integrated in Clause 7 and totally changed, the title also has been changed to “Limitations of generalizing product behavior”;

— Annex A has been re-written, tests have been added, description of the tests has been compressed with more focus on FSE.

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

There is a current trend towards performance-based approaches in national building regulations. This trend has seen rapid advancement internationally in the development of fire safety engineering. This has been supported by the application of fire modelling over the last 15 years, as marked by the originally published ISO/TR 13387-1 to 8[1)], and followed by ISO 23932-1, ISO/TS 16733, ISO 16730, ISO/TS 24679 and ISO/TR 16738. The impact of these documents and activities carried out nationally, have clearly identified that there are inconsistencies between the requirements of fire safety engineering (including the application of fire modelling) and the data reported from standard fire tests and ad hoc experiments.

The document is intended to assist in the development of an internationally consistent approach to support fire safety engineering activities by appropriate fire test methods that, where possible, are also used for the primary function of fire safety regulation of the use of construction products.

It examines the majority of the current reaction to fire test methods in the TC 92/SC 1 portfolio and provides information to support the use of the data that the tests provide for fire safety engineering and fire modelling.

1) The ISO/TR 13387 series is withdrawn.

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Fire tests — Applicability of reaction to fire tests to fire modelling and fire safety engineering

1 Scope

This document gives guidelines on the applicability of the existing reaction to fire tests to fire safety engineering and fire modelling. It also gives general guidance on the type of data needed for fire safety engineering calculations and for fire modelling.

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*

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 http://www.electropedia.org/

3.1
design fire
quantitative description of assumed fire characteristics within the design fire scenario

3.2
design fire scenario
specific fire scenario on which an analysis will be conducted

3.3
fire scenario
qualitative description of the course of a fire with time, identifying key events that characterise a particular fire and differentiate it from other possible fires

4 Symbols and abbreviated terms

FSE	Fire safety engineering
t_g	is the characteristic time from reference ignition to reach heat release rate Q_0 (s)
$\dot{Q}$	is heat release rate (MW)
$\dot{Q}_0$	is the reference heat release rate, often taken to be 1 MW

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