
**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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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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 (FSE). This has been supported by the application of fire modelling over the last five years, as marked by the publication of ISO/TR 13387-1, ISO/TR 13387-2, ISO/TR 13387-3, ISO/TR 13387-4, ISO/TR 13387-5, ISO/TR 13387-6, ISO/TR 13387-7 and ISO/TR 13387-8. The development of ISO/TR 13387-1, ISO/TR 13387-2, ISO/TR 13387-3, ISO/TR 13387-4, ISO/TR 13387-5, ISO/TR 13387-6, ISO/TR 13387-7 and ISO/TR 13387-8, as well as activities carried out nationally, have clearly identified that there are inconsistencies between the requirements of FSE (including the application of fire modelling) and the data reported from standard tests and ad hoc experiments.

This Technical Report is intended to assist in the development of an internationally consistent approach to the support of FSE by giving guidance on appropriate fire test methods that, where possible, have the primary function of fire safety regulations for the use of construction products.

It examines all of the current reaction to fire test methods and provides information to support the use of the data that the tests provide for FSE and fire modelling.

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

1 Scope

This Technical Report gives guidelines on the applicability of the current reaction to fire tests to fire safety engineering (FSE) and fire modelling. It also gives general guidance on the type of data needed for FSE calculations and fire modelling.

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 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.

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 characterize the fire and differentiate it from other possible fires

4 Symbols and abbreviated terms

FSE Fire safety engineering

\dot{Q} is the heat release rate (MW)

\dot{Q}_0 is the reference heat release rate, often taken to be 1 MW

t_g is the characteristic time to reach heat release rate, \dot{Q}_0 (s)