
**Fire-resistance tests — Elements of
building construction —**

Part 3:
**Commentary on test method and guide
to the application of the outputs from the
fire-resistance test**

Essais de résistance au feu — Éléments de construction —

*Partie 3: Commentaires sur les méthodes d'essais et guides pour
l'application des résultats des essais de résistance au feu*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 834-3 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

This second edition cancels and replaces the first edition (ISO/TR 834-3:1994), which has been technically revised.

ISO/TR 834 consists of the following parts, under the general title *Fire-resistance tests — Elements of building construction*:

- Part 1: *General requirements*
- Part 2: *Guidance on measuring uniformity of furnace exposure on test samples*
- Part 3: *Commentary on test method and guide to the application of the outputs from the fire-resistance test*
- Part 4: *Specific requirements for loadbearing vertical separating elements*
- Part 5: *Specific requirements for loadbearing horizontal separating elements*
- Part 6: *Specific requirements for beams*
- Part 7: *Specific requirements for columns*
- Part 8: *Specific requirements for non-loadbearing vertical separating elements*
- Part 9: *Specific requirements for non-loadbearing ceiling elements*

The following parts are under preparation:

- Part 10: *Specific requirements to determine the contribution of applied fire protection materials to structural elements*
- Part 11: *Specific requirements for the assessment of fire protection to structural steel elements*
- Part 12: *Specific requirements for separating elements evaluated on less than full scale furnaces*

Introduction

Fire resistance is a property of a construction and not of a material and the result achieved is to a large extent related to the design of the specimen and the quality of the construction. It is not an “absolute” property of the construction and variations in both the materials and methods of construction will produce differences in the measured performance and changes in the exposure conditions are likely to have an even greater impact on the level of fire resistance the element can provide.

This part of ISO/TR 834 provides guidance to those contemplating testing, the laboratory staff performing the test, the designers of buildings, the specifiers and the authorities responsible for implementing fire safety legislation, to enable them to have a greater understanding of the role of the fire resistance test and the correct application of its outputs.

Fire-resistance tests — Elements of building construction —

Part 3:

Commentary on test method and guide to the application of the outputs from the fire-resistance test

1 Scope

This part of ISO/TR 834 provides background and guidance on the use and limitations of the fire resistance test method and the application of the data obtained. It is designed to be of assistance to code officials, fire safety engineers, designers of buildings and other persons responsible for the safety of persons in and around buildings.

This part of ISO/TR 834 identifies where the procedure can be improved by reference to ISO/TR 22898.

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 834-1:1999, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

ISO/TR 834-2, *Fire-resistance tests — Elements of building construction — Part 2: Guide on measuring uniformity of furnace exposure on test samples*

ISO 3009, *Fire-resistance tests — Elements of building construction — Glazed elements*

ISO/TR 12470, *Fire-resistance tests — Guidance on the application and extension of results*

ISO/TR 22898, *Review of outputs for fire containment tests for buildings in the context of fire safety engineering*

3 Standard test procedure

The primary purpose of a fire resistance test, e.g. ISO 834-1, is to characterize the thermal response of elements of construction when exposed to a fully developed fire within enclosures formed by, or within buildings. The output of the test permits the construction tested by this method to be given a classification of performance within a time based classification system (see Clause 5). The test provides data that may be of use to a fire safety engineer, albeit the test only reproduces one, of many, potential fire scenarios.

Practical considerations dictate that it is necessary to make a number of simplifications in any standard test procedure that is designed to replicate a real life event, in order to provide for its use under controlled conditions in any laboratory with the expectation of achieving reproducible and repeatable results.

The fire resistance test is designed to apply to a particular fire scenario within the built environment, but with an understanding of its limitations and objectives it may be applied to other constructions.

Some of the features which lead to a degree of variability are outside of the scope of the test procedure, particularly where material and constructional differences become critical. Other factors which have been identified in this part of ISO 834 are within the capacity of the user to accommodate. If appropriate attention is paid to these factors, the reproducibility and repeatability of the test procedure can be improved, possibly to an acceptable level.