INTERNATIONAL STANDARD 834

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Fire-resistance tests — Elements of building construction

Essais de résistance au feu — Éléments de construction

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 834 was drawn up by Technical Committee ISO/TC 92, *Fire tests on building materials and structures*, and circulated to the Member Bodies in September 1973.

It has been approved by the Member Bodies of the following countries :

Australia	Hungary	Romania
Belgium	India	South Africa, Rep. of
Bulgaria	Ireland	Spain
Canada	Israel	Sweden
Czechoslovakia	Italy	Thailand
Denmark	Mexico	Turkey
Egypt, Arab Rep. of	New Zealand	U.S.A.
France	Norway	Yugoslavia
Germany	Portugal	

The Member Body of the following country expressed disapproval of the document on technical grounds :

United Kingdom

This International Standard cancels and replaces ISO Recommendation R 834-1968, of which it constitutes a technical revision.

The revision has been made with the intention of specifying the test conditions more precisely in order to improve the reproducibility of the test results.

Guidance on the planning, performance and reporting of fire-resistance tests in accordance with this International Standard is given in annex A.

Reference should also be made to Technical Report ISO/TR 3956, *Principles of structural fire-engineering design with special regard to the connection between real fire exposure and the heating conditions of the standard fire-resistance test (ISO 834).*

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Fire-resistance tests — Elements of building construction

1 SCOPE

This International Standard specifies standard heating and pressure conditions, a test method and criteria for the determination of the fire resistance of elements of building construction of various categories.

The test provides for the determination of fire resistance of elements of building construction on the basis of the length of time for which the test specimens, of specified dimensions, satisfy the criteria laid down under the prescribed test conditions during the period of fire exposure.

2 FIELD OF APPLICATION

This International Standard is applicable to such structural elements of building construction as

- walls and partitions;
- columns;
- beams;
- floors (with or without ceilings);[1)]
- roofs (with or without ceilings).[1)]

This list is not exhaustive. Elements which fall into none of these categories may be tested by analogy with a similar element.

This fire-resistance test should not be used for classification of discrete materials or single components as such of an element of building construction. Tests for doors, shutters and glazing are dealt with in ISO 3008, *Fire-resistance tests on door and shutter assemblies*, and ISO 3009, *Fire-resistance tests on glazed elements.*

3 APPARATUS

The main items of apparatus are :

3.1 Furnace, capable of subjecting a specimen element to the standard heating and pressure conditions specified in clause 4.

3.2 Loading equipment (if necessary).

3.3 Thermocouples for measuring the internal temperature of the furnace and the surface and internal temperatures of the test specimens in conformity with the requirements of 4.1.2, 4.1.3 and 4.1.4.

3.4 Equipment for measuring overpressure in furnaces for testing walls and floors.

4 STANDARD HEATING AND PRESSURE CONDITIONS

4.1 Standard heating conditions

4.1.1 *Temperature rise*

The temperature rise within the furnace shall be controlled so as to vary with time within the limits specified in 4.1.3 according to the following relationship :

$$T - T_0 = 345 \log_{10} (8t + 1)$$

where

t is the time, expressed in minutes;

T is the furnace temperature at time t, expressed in degrees Celsius;

T_0 is the initial furnace temperature, expressed in degrees Celsius.

The curve representing this function, known as the "standard time-temperature curve", is shown in figure 1.

1) An annex concerning the testing of suspended ceilings without roof or floor is in preparation.