
**Reaction-to-fire tests — Determination of
fire and thermal parameters of materials,
products and assemblies using an
intermediate-scale calorimeter (ICAL)**

*Essais de réaction au feu — Détermination, à l'aide d'un calorimètre à
échelle intermédiaire (ICAL), des paramètres thermiques et relatifs au
feu des matériaux, produits et ouvrages*



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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.

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 14696 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth*.

This first edition cancels and replaces ISO/TR 14696:1999, which has been technically revised.

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Reaction-to-fire tests — Determination of fire and thermal parameters of materials, products and assemblies using an intermediate-scale calorimeter (ICAL)

1 Scope

This International Standard provides a method for measuring the response of materials, products and assemblies exposed in vertical orientation to controlled levels of radiant heating with a piloted ignition source.

This test method is used to determine the ignitability, heat release rates, mass loss rates and visible smoke development of materials, products and assemblies under well-ventilated conditions.

The heat release rate is ascertained by measurement of the oxygen consumption as determined by the oxygen concentration and flow in the exhaust product stream as specified in 5.5.8. Smoke development is quantified by measuring the obscuration of light by the combustion product stream.

Specimens are exposed to heating fluxes ranging from 0 kW/m² to 50 kW/m². Hot wires are used as the ignition source.

This test method has been developed for material, product or assembly evaluations, mathematical modelling and design purposes. The specimen shall be tested in thicknesses and configurations representative of actual end product or system uses.

The test method in this International Standard is based on the apparatus described in ASTM E1623 [13].

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 9705, *Fire tests — Full-scale room test for surface products*

ISO 13943: 2000, *Fire safety — Vocabulary*

ISO 14934-3, *Fire tests — Calibration and use of heat flux meters — Part 3: Secondary calibration method*

ISO 24473, *Fire tests — Open calorimetry — Measurement of the rate of production of heat and combustion products for fires of up to 40 MW*