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**Fire tests — Calibration and use of  
heat flux meters —**

**Part 1:  
General principles**

*Essais au feu — Étalonnage et utilisation des appareils de mesure du  
flux thermique —*

*Partie 1: Principes généraux*



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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 14934-1 was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth*.

This first edition of ISO 14934-1 cancels and replaces ISO/TS 14934-1:2002, which has been technically revised.

ISO 14934 consists of the following parts, under the general title *Fire tests — Calibration and use of heat flux meters*:

- *Part 1: General principles*
- *Part 2: Primary calibration methods*
- *Part 3: Secondary calibration method*
- *Part 4: Guidance on the use of heat flux meters in fire tests* [Technical Specification]

## Introduction

In many fire test methods, the radiation level is specified and therefore, it is of great importance that the radiant heat flux be well defined and measured with sufficient accuracy. Radiant heat transfer is also the dominant mode of heat transfer in most real fires.

In practice, radiant heat flux is usually measured with so-called total heat flux meters of the Schmidt-Boelter (thermopile) or Gardon (foil) type. It is important to realize that such meters always register a combined heat flux from radiation and convection. It is also important to realize that the total heat flux meters register the heat flux to a cooled surface which is not the same level of heat flux that a non-cooled surface receives. Finally, the only heat transfer that is well defined is the incident radiant heat of the calibration situation in the black-body radiant sources used for primary calibration.

This part of ISO 14934 gives the terms and definitions intended for use with the other parts, namely ISO 14934-2 (three primary methods for calibration of heat flux meters), ISO 14934-3 (conduct of secondary calibration) and ISO/TS 14934-4 (construction and use of different types of heat flux meters).

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# Fire tests — Calibration and use of heat flux meters —

## Part 1: General principles

### 1 Scope

This part of ISO 14934 specifies the terms and definitions for the calibration and use of heat flux meters (see ISO 14934-2, ISO 14934-3 and ISO/TS 14934-4). It also describes the relationship between output voltage and total heat flux. It gives uncertainty components that are relevant for the calibration and use of heat flux meters (see Clause 7).

This part of ISO 14934 does not contain the methods for the calibration of heat flux meters, which are covered in ISO 14934-2 and ISO 14934-3.

### 2 Normative references

The following referenced documents are indispensable for the application of this document and for the other parts of ISO 14934. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13943:2008, *Fire safety — Vocabulary*

ISO 14934-2, *Fire tests — Calibration and use of heat flux meters — Part 2: Primary calibration methods*

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

ISO/TS 14934-4, *Fire tests — Calibration of heat flux meters — Part 4: Guidance on the use of heat flux meters in fire tests*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

ASTM E511, *Standard Test Method for Measuring Heat Flux Using a Copper-Constantan Circular Foil Heat-Flux Transducer*

ASTM E2683, *Standard Test Method for Measuring Heat Flux Using Flush-Mounted Insert Temperature-Gradient Gages*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13943, ISO/IEC Guide 98-3 and ISO/IEC Guide 99 and the following apply.

**NOTE** The definitions are listed as primary and secondary definitions. The secondary definitions are developed from the primary definitions. The definitions are listed according to the hierarchy of the concepts.