Technical Report

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Application examples for using reaction-to-fire test data for fire safety engineering

Exemples d'applications de l'utilisation des données des essais de réaction au feu pour l'ingénierie de la sécurité incendie

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In recent years, fire test data has been increasingly used as input for fire safety engineering (FSE) calculations. This document provides three different examples of how fire test data can be used for FSE. Guidance on how data can be derived from reaction-to-fire tests is given in ISO/TR 17252. Background on reaction-to-fire tests and limitations of data derived from these tests is given in ISO/TS 3814.

Application examples for using reaction-to-fire test data for fire safety engineering

1 Scope

This document provides three examples of the use of reaction-to-fire test data for fire safety engineering (FSE).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 13943 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Abbreviated terms

CFD	computational fluid dynamics
FSE	fire safety engineering
LIFT	lateral ignition and flame transport
MLR	mass loss rate

4 Example 1: Using mass loss data for a single burning item as input for computational fluid dynamics (CFD) calculations

4.1 Introduction

The use of data from open calorimetry or mass loss measurements for a single burning item is used in FSE to predict, for example, the temperature development, smoke development or the further spread of fire.

This example provides insight in the use of mass loss data for CFD calculations and its limitations.

4.2 Experimental investigations

Three tests with a modern upholstered chair were performed, see Table 1. In all three experiments, the modern upholstered chair was ignited with a 100-gr paper cushion which was made similar to the standard train seat ignition source (according to DIN 5510).