INTERNATIONAL STANDARD

ISO 16405

First edition
2015-03-01

Room corner and open calorimeter — Guidance on sampling and measurement of effluent gas production using FTIR technique

Mesurage de la production de gaz toxique à l'aide de la technique IRTF pour l'essai en coin de salle et calorimétrie ouverte

Reference number
ISO 16405:2015(E)

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Published in Switzerland

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 92, *Fire safety*, Subcommittee SC 1, *Fire initiation and growth*.

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Introduction

This International Standard is intended to obtain concentrations of effluent gases produced in large-scale or simulated real-scale fire tests, such as the room corner test and open calorimeters. These tests describe the fire behaviour of a product under controlled laboratory conditions.

The test standard can be used as part of a fire hazard assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

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Room corner and open calorimeter — Guidance on sampling and measurement of effluent gas production using FTIR technique

1 Scope

This International Standard gives guidance concerning suitable apparatus and procedures to be used when applying the FTIR method to measure concentrations of effluent gases produced in large-scale or simulated real-scale fire tests. Such tests include the room corner test (see ISO 9705) and open calorimeter tests as described in ISO 24473.

This guidance and measuring method only describes the way in which the sampling of the gases and collection of FTIR spectra are performed. Analysis of spectra and calibration is part of ISO 19702.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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, *Fire safety — Vocabulary*

ISO 19702:—[1)], *Guidance for sampling and analysis of toxic gases and vapours in fire effluents using Fourier Transform Infrared spectroscopy (FTIR)*

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

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

3 Terms and definitions

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

4 Principle

By using the on-line FTIR technique, it is possible to simultaneously measure the time resolved concentration of several gases during a fire test.

The practical measurement procedure is to continuously extract a fraction of the effluents from the exhaust duct (the most common application) from the opening of the test room or, alternatively, from a position in the vicinity of a test object through a heated sampling system and into a heated optical cell. There, the specific absorption patterns of infrared-active species are recorded by a detector. This information is subsequently presented as an absorption spectrum that is used to determine the concentrations of effluent components. The frequency of collection of absorption spectra, the

1) To be published. (Revision of ISO 19702:2006)

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