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BSI Standards Publication

FTIR analysis of fire effluents in cone calorimeter tests

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National foreword

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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*.

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Introduction

The composition of the effluent from an enclosure fire is determined by the combustible items in the enclosure, such as interior furnishings and wall linings, and the fire conditions within the enclosure. To represent any product involved in any fire scenario, the ideal fire test specimen is the complete item, and the ideal test is one conducted in an enclosure of appropriate size. Unfortunately, real-scale testing of commercial products is not generally economically feasible. This document describes an indicative approach for obtaining gas yields under specific fire conditions. It involves the use of a small-scale combustor in which a small test specimen is exposed to a pre-defined radiative heat flux. The test specimen should be representative of the finished product

This document provides a method for continuous quantification of gases (i.e. time-resolved gas analysis) emitted from a test specimen exposed to irradiance in a cone calorimeter, after extraction of effluent gas to a FTIR gas analyser. It produces data as the gas volume fraction (µL/L) or gas yield (mg/kg) during the test period. Data generated allow a better understanding of gas emissions during cone calorimeter tests, which can be useful for Fire Safety Engineering and for material development. Some examples of FTIR analysers used with cone calorimeters are presented in Table A.1.

The cone calorimeter uses a well-ventilated physical fire model, so results are only relevant for this scenario. Toxicity assessment for materials or products are not covered in this document and interpretation of data is covered separately in ISO 13571 or ISO 13344.

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