



Fire tests — Small chimneys — Testing at elevated temperatures

Essais au feu — Petites cheminées — Essai aux températures élevées

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4736 was developed by Technical Committee ISO/TC 92, *Fire tests on building materials, components and structures*, and was circulated to the member bodies in March 1977.

It has been approved by the member bodies of the following countries :

Belgium	India	Spain
Bulgaria	Israel	Sweden
Czechoslovakia	Italy	Switzerland
Denmark	Japan	Turkey
Egypt, Arab Rep. of	Mexico	USA
Finland	Netherlands	USSR
Germany, F.R.	Norway	Yugoslavia
Hungary	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

France
United Kingdom

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0 INTRODUCTION

0.1 All tests included in this International Standard are relevant to the tightness, heat insulation and mechanical strength of separate chimneys, but not to the testing of performance in an economic sense, nor to the investigation of the need for increased insulation or covering for the chimney shaft over the roof in order to prevent possible condensation and frost damage of the upper parts of the chimney while in service.

0.2 This International Standard does not provide for testing an insulated chimney surrounded by a typical roof or floor construction. Such constructions normally result in higher chimney exterior surface temperatures which may be critical in terms of ignition of adjacent combustibles. Different standards and tests prescribed by national regulatory authorities will be required to take into account the effects of combustible roof construction. Further tests may also be necessary, for example corrosion tests for metal chimneys.

0.3 This International Standard concerns only insulated chimneys (which can be used in conjunction with constructions of combustible materials) and not uninsulated flue pipes.

0.4 As the deformation of a heated chimney will generally differ from that of the surrounding unheated structures, constructional factors must be taken into account when rules are formulated for the connections between a chimney and the surrounding structure, which in some cases can form part of the chimney.

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard specifies a laboratory method of test primarily intended for small chimneys having a natural draught.

1.2 This test is designed to test small insulated chimneys for tightness, heat insulation and mechanical strength under standard conditions similar both to normal service conditions and to flue fire conditions and for durability

against treatment such as may occur during sweeping. The test is part of a series of tests necessary to assess the suitability of a chimney for use, but this test does not provide information on the fire performance of the chimney when installed in combustible roof constructions.

1.3 This test provides information on the performance of the chimney under a set of prescribed temperature and flow rate conditions but does not provide information appropriate to specific heating appliances which may burn a variety of fuels and generate flue gases at different temperatures and mass flow rates. Different standards and tests prescribed by national regulatory authorities will be required to take into account the performance of chimneys when used with a variety of heating appliances.

2 DEFINITIONS

For the purpose of this International Standard, the following definitions apply.

2.1 **chimney** : A heat-insulated, vertical tube for leading away combustion products.

2.2 **small chimney** : A chimney with a specified maximum calorific input.¹⁾

3 GENERAL PRINCIPLES OF THE TEST

3.1 The test specimen shall be constructed, conditioned and tested within a building.

3.2 The chimney shall be tested standing free without any connections or free openings, excluding one at the base which is necessary for the input of hot gases and one at the top, necessary for their discharge from the flue.

3.3 Combustion gases shall be blown into the chimney in such a way that the temperatures of these flue gases measured at the specified level achieve given values. The distribution of the temperature within the flue and the temperatures on the external wall surfaces of the chimney shall be recorded. During dismantling, note shall be made of all changes that have taken place.

1) In some countries the maximum calorific input is 120 kW.