BRITISH STANDARD

BS 476-22: 1987

Fire tests on building materials and structures —

Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Fire Standards Committee (FSM/-) to Technical Committee FSM/1, upon which the following bodies were represented:

Association of British Roofing Felt Manufacturers
Association of Building Component Manufacturers Ltd.
Association of Structural Fire Protection Contractors and Manufacturers
British Coal
British Fire Services' Association
British Floor Covering Manufacturers' Association
British Plastics Federation
British Railways Board
British Rigid Urethane Foam Manufacturers' Association
British Wood Preserving Association
Cement and Concrete Association
Chemical Industries Association
Chief and Assistant Chief Fire Officers' Association
Concrete Society
Department of Education and Science
Department of the Environment (Housing and Construction Industries)
Department of the Environment (Property Services Agency)
Department of the Environment for Northern Ireland
Department of Transport (Marine Directorate)
Electricity Supply Industry in England and Wales
Engineering Equipment and Materials Users' Association
Eurisol (UK) Association of Manufacturers of Mineral Insulation Fibres
Fibre Building Board Organization (FIDOR)
Fibre Cement Manufacturers' Association Limited
Fire Insurers' Research and Testing Organisation (FIRTO)
Fire Offices Committee
Fire Protection Association
Flat Glass Manufacturers' Association
Flat Roofing Contractors' Advisory Board
Gypsum Products Development Association
Home Office
Institution of Fire Engineers
Mastic Asphalt Council and Employers' Federation
National Council of Building Materials Producers
National GRP Construction Federation
PAFRA Technology Ltd.
Royal Institute of British Architects
Steel Construction Institute
Timber Research and Development Association
United Kingdom Atomic Energy Authority
United Kingdom Antimony Oxide Manufacturers' Association
Warrington Fire Research Centre
Wood Wool Slab Manufacturers' Association
Yarsley Technical Centre Ltd.

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Association of Builders Hardware Manufacturers
British Steel Industry
Department of the Environment (Building Research Establishment) (Fire Research Station)
Door and Shutter Association
Electric Cable Makers' Confederation
Guild of Architectural Ironmongers
Hevac Association
Intumescent Fire Seals Association
National Association of Lift Makers
Suspended Ceilings Association
Thermal Insulation Manufacturers and Suppliers Association (TIMSA)

This British Standard, having been prepared under the direction of the Fire Standards Committee, was published under the authority of the Board of BSI and comes into effect on 29 May 1987

The following BSI references relate to the work on this standard:
Committee reference FSM/1
Drafts for comment 84/38385 DC & 85/41319 DC

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Amendments issued since publication

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Contents

Foreword

This Part of BS 476 has been prepared under the direction of the Fire Standards Committee, and describes the procedures for determining the fire resistance of non-loadbearing elements of building construction. This Part should be read in conjunction with BS 476-20 which describes the general principles for these methods.

This Part has been prepared in such a way as to allow reference to be made to the appropriate method of determining the fire resistance of the designated element by clause number only. Therefore clauses **5** to **7** are selfcontained and cross refer to BS 476-20 where necessary.

Methods for determining the fire resistance of loadbearing elements that have a finite fire resistance and of components that make a contribution to the fire resistance of a structure are described in BS 476-21 and 23 respectively.

The general changes made to the methods described in this Part compared with BS 476-8 are described in the foreword to BS 476-20. Appendix A gives guidance and background information which will assist the designer and the testing laboratory to select and evaluate specimens that are representative of "in use" situations.

The methods described are not relevant to the assessment of the penetration of smoke under cold and/or medium temperature conditions, and for such information on doorsets and shutter assemblies, the methods described in BS 476-31.1 and in other Sections of Part 31 (in preparation) are applicable.

Attention is drawn to the Health and Safety at Work etc. Act 1974, and the need to ensure that the methods described in this standard are carried out under suitable environmental conditions to provide adequate protection to personnel against the risk of fire and/or inhalation of smoke and/or toxic products of combustion.

CAUTION. The mechanical sawing of asbestos cement components attracts the provisions of the Asbestos Regulations 1969. Adequate methods exist to control levels of dust during such operation and these are detailed in the Control and Safety Guides[1)] issued by the Asbestos Research Council.

This Part, together with BS 476-20, 21, 23 and 24, supersedes BS 476-8:1972 which is withdrawn. However, the latter will still be made available on request since it is referred to in building regulations and other legislative documents.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

[1)] Available from the Asbestos Information Centre, Sackville House, 40 Piccadilly, London W1V 9PA.

1 Scope

This Part of BS 476 describes procedures for determining the fire resistance of non-loadbearing elements of building construction when subjected to the heating and pressure conditions specified in BS 476-20. This Part is applicable to vertical partitions, to fully insulated, partially insulated and uninsulated vertical doorsets and shutter assemblies (except fire dampers incorporated in ducts), to ceiling membranes, and to glazed elements.

The methods described are appropriate to normal combinations of these elements.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 476, the definitions given in BS 476-20 and BS 4422 apply, together with the following:

2.1
ceiling membrane

a non-loadbearing element of a building construction designed to provide horizontal fire separation as distinct from protection to any floor or roof above

2.2
doorset

an assembly (including any frame or guide) for the closing of permanent openings in separating elements. For the purposes of this standard, the term doorset includes shutter assemblies but excludes fire dampers for incorporation into ducts

2.3
partition

a non-loadbearing element of a building construction designed to provide vertical fire separation when exposed to fire from one side

NOTE The partition may incorporate either glazing or doors.

3 Test conditions

The test conditions shall be as specified in BS 476-20.

4 Apparatus

The apparatus for the test shall be as specified in BS 476-20 except that the apparatus for the provision of loading and fixity specified in **6.2** and **6.3.2** of BS 476-20:1987 is not required.

5 Determination of the fire resistance of partitions

5.1 General

This clause describes a method for the determination of the fire resistance of partitions and non-loadbearing walls providing vertical separation which are required to withstand exposure from fire from one or either side (see **A.1.1**).

NOTE Loadbearing partitions or walls should be tested in accordance with BS 476-21.

5.2 Test specimen

5.2.1 *General.* Partitions shall be tested from both sides, i.e. two specimens, unless the partition is entirely symmetrical or unless the weakest direction can be clearly identified or unless the partition is known to be exposed to a fully developed fire from one side only. If testing is carried out from one side only, i.e. one specimen, the reason for this shall be clearly stated in the report.

5.2.2 *Dimensions.* The test specimen shall be of such dimensions that at least 3 m × 3 m is exposed to the furnace or full size if the element is smaller.

5.2.3 ***Design of specimen***

5.2.3.1 When partitions include mechanical joints in the element for either erection, construction, or as a result of dimensional co-ordination, the specimen shall incorporate at least one joint of each type, even though these may occur at greater than 3 m centres.

Different jointing systems in a single specimen shall be avoided if they are likely to give substantially different performances and affect the evaluation of the performance of the whole system. In such cases it is preferable to conduct tests on different specimens for each jointing system.

5.2.3.2 Partitions frequently incorporate a head section that is capable of accommodating deflections from floor slabs above. When such a detail is included in the specimen, the specimen shall be tested with the deflection head in the mid-position of its adjustment.

5.2.3.3 Partitions often incorporate services; where these form an integral part of the element, the test construction shall incorporate them in a representative manner. When the services and associated fittings are not an integral part of the element but may be fitted subsequently in a manner that may have an adverse effect on the fire resistance of the element, these shall be subject to a separate test.

5.2.4 *Test construction and condition.* The construction and condition of the specimen shall be in accordance with BS 476-20 except for the requirements for fixity and loading (see **A.1.4**).