

Structural use of timber —

Part 4: Fire resistance of timber structures —

Section 4.1: Recommendations for calculating fire resistance of timber members

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Code Drafting Committee CSB/32

The structural use of timber

Chairman
British Woodworking Federation

Department of the Environment:
Building Research Establishment,
Princes Risborough Laboratory
Department of the Environment:
Housing and Construction
Department of the Environment (PSA)
Greater London Council
Incorporated Association of Architects and Surveyors

Institute of Wood Science
Institution of Civil Engineers
Institution of Structural Engineers

National Building Agency
National Federation of Building Trade Employers
National House-Building Council
Royal Institution of Chartered Surveyors
Timber Research and Development Association
Timber Trade Federation

Trussed Plate Manufacturers' Association
Co-opted

Secretary
Drafting sub-committee CSB/32/6

Chairman
British Woodworking Federation

Department of the Environment
Department of the Environment:
Building Research Establishment (Fire Research Station)
Greater London Council

Institution of Structural Engineers

Royal Institution of Chartered Surveyors
Timber Research and Development Association
Co-opted

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Mr J G Sunley
Mr B Perkins
Mr B A Spurgeon
Mr E C Ozelton
Mr G H Cowley

Mr W T Curry
Dr J W W Morgan

Mr F A Lefever
Mr R H Cutts
Mr J O A Korff
Mr E Downes
Mr D F Brough
Mr I D G Lee
Mr R F Marsh
Mr P O Reece OBE
Mr P J Steer
Mr D W Gardner
Dr L G Booth
Mr J A Baird
Mr R F Pontin
Mr P B R Johnson
Mr M J V Powell
Mr D G Burenam
Mr H J Burgess
Mr H Gordon Craig
Mr G O Hutchison
Mr M Macdonnell
Dr W W L Chan
Mr H P Stone
Mr R W Wands
Mr C B Corbin

Mr P J Steer
Mr J Riley
Mr K Thurman
Mr P G Grimsdale
Mr W H Cutmore

Mr F C Adams
Mr A S Brown
Mr G J Sansom
Mr J Ollis
Mr P J Steer
Mr D G Burcham
Dr G S Hall
Mr R Highet

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Foreword

BS 5268 supersedes the earlier code of practice CP 112 “*The structural use of timber*”.

It is intended that BS 5268 will have the following Parts

- *Part 1: Limit state design;*
- *Part 2: Code of practice for permissible stress design, materials and workmanship;*
- *Part 3: Code of practice for trussed rafter roofs;*
- *Part 4: Fire resistance of timber structures;*
- *Section 4.1: Recommendations for calculating fire resistance of timber members;*
- *Section 4.2: Recommendations for calculating fire resistance of timber stud walls and joisted floor constructions;*
- *Part 5: Preservative treatments for constructional timber;*
- *Part 6: Code of practice for timber frame walls;*
- *Section 6.1: Dwellings not exceeding three storeys¹⁾;*
- *Part 7: Recommendations for the calculation basis for span tables;*
- *Section 7.1: Domestic floor joists¹⁾;*
- *Section 7.2: Joists for flat roofs¹⁾;*
- *Section 7.3: Ceiling joists¹⁾;*
- *Section 7.4: Ceiling binders¹⁾;*
- *Section 7.5: Domestic rafters¹⁾;*
- *Section 7.6: Purlins¹⁾;*
- *Section 7.7: Purlins supporting sheeting or decking.*

The recommendations of Part 1 of BS 5268, preparation of which has not yet started, may entirely supersede those of Part 2 of BS 5268 after a limited number of years.

Section 4.1 of BS 5268-4 gives information for the calculation of fire resistance. Such calculations are possible because, in fire, the behaviour of timber is predictable with regard to the rate of charring and loss of strength. It is also free from rapid changes of state and has very low coefficients of thermal expansion and thermal conductivity. Timber treatments including impregnation to retard the surface spread of flame should not be assumed to affect the charring rate. Section 4.2 will deal with timber stud walls and joisted floor constructions.

Fire resistance relates to complete elements of construction and not to individual materials; the appropriate test is described in BS 476-20¹⁾. The stability (resistance to structural failure), integrity and insulation criteria may all be applicable and the performance of an element is expressed in terms of the periods of time that the appropriate criteria are satisfied.

The methods given in this code for assessing by calculation the fire resistance of timber members, in relation to stability criteria, use stress modification factors (see 5.1.2 and 5.2.2) which have been arrived at empirically and checked against the results of a number of fire resistance tests conducted in accordance with the appropriate British Standard.

¹⁾ The test methods specified in BS 476-8 have been revised and replaced by BS 476-20 to BS 476-23. The calculation methods of BS 5268-4 rely essentially on data gathered from tests to BS 476-8. In due course data will become available from the revised testing procedures which will then be incorporated into Section 4.1 of BS 5268. The definitions and terminology of BS 476-20 will be maintained until these data are available.

It is current practice during the fire resistance test in accordance with BS 476-20 in the case of compression members, to apply an axial load only, because the limitations of the existing test equipment preclude other loading arrangements. The information given in this Part of the code, dealing with the assessment of fire resistance of compression members, relates to fire resistance tests, where limited loading arrangements have to be used.

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

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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