
British Standard

Structural use of timber

Part 4. Fire resistance of timber structures

Section 4.2. Recommendations for calculating fire resistance
of timber stud walls and joisted floor constructions

Utilisation de bois en construction

Partie 4. Résistance au feu des structures en bois

Section 4.2 Recommandations pour le calcul de la résistance au feu des cloisons
de colombage et planchers à solives en bois

Verwendung von Holz im Bauwesen

Teil 4' Feuerbeständigkeit von Holzbauten

Abschnitt 4.2 Empfehlungen für die Berechnung der Feuerbeständigkeit von
Fachwerkwänden und Balkendecken

Foreword

This Section of BS 5268 has been prepared under the direction of the Civil Engineering and Building Structures Standards Policy Committee.

The Code of Practice CP 112 'The structural use of timber' has been allocated the new number BS 5268 as part of the integration of work on codes and standards.

Other Parts of this British Standard will be as follows.

- Part 1 Limit state design, materials and workmanship (for later publication).
- Part 2 Permissible stress design, materials and workmanship.
- Part 3 Trussed rafters for 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 Preservation treatment for constructional timber*
- Part 6 Timber frame wall design
 - Section 6.1. Dwellings not exceeding three storeys
- Part 7 Recommendations for the calculation basis for span tables
 - Section 7.1. Domestic floor joists
 - Section 7.2. Joists for flat roofs
 - Section 7.3. Ceiling joists
 - Section 7.4. Ceiling binders
 - Section 7.5. Domestic rafters†
 - Section 7.6. Purlins†
 - Section 7.7. Purlins supporting sheeting or decking†

BS 5268 : Part 4 gives information by which the fire resistance of timber elements of construction may be calculated. Such calculations are possible because, in fire, the behaviour of timber, with many common materials used in association with it, is predictable with regard to the rate of charring and loss of strength. Timber itself has very low coefficients of thermal expansion and conductivity and does not undergo any rapid change of state.

Section 4.1 of BS 5268 : Part 4 gives information required for the calculation of fire resistance for individual timber members. This Section of BS 5268 extends the code to include composite timber elements.

Fire resistance is related to elements of construction and not to individual materials; the appropriate test on which this document is based is described in BS 476 : Part 8*. The stability (resistance to structural failure), integrity and insulation criteria may all be applicable. The performance of an element is expressed in terms of the periods of time for which it satisfies the appropriate criteria.

This Section of BS 5268 lays down methods for calculating fire resistance which relate to the standard procedures for fire resistance testing. It should not be assumed that the performance of elements in real fire situations will necessarily be the same.

Care should be taken when applying this method of calculation to existing construction to take account of the actual condition of the construction.

NOTE. The results obtained from fire resistance tests in accordance with BS 476 : Part 8†, on any specific construction take precedence over results derived from the information given in this Section of BS 5268. Assessments by a competent authority of a particular construction are as valid as the result of the method of calculation given in this Section of this standard.

New information on the fire resistance performance of composite timber elements and their component materials is continually being obtained from fire tests. Competent authorities may use such new information in conjunction with this Section of BS 5268 to provide assessments of the performance of individual constructions where appropriate. However, information from other fire resistance testing should not be used to generate new or additional values for the various tables without formal endorsement by the committee responsible for preparing this Section of BS 5268.

This Section of BS 5268 does not include constructions which include proprietary or generic materials for which there are no British Standards. For information on such constructions reference should be made to test results provided by manufacturers or suppliers, or published lists of tested constructions.

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

*Revision in preparation.

†In preparation

‡The test methods specified in BS 476 : Part 8 have been revised and replaced by BS 476 : Parts 20 to 23. The calculation methods of BS 5268 : Part 4 rely essentially on data gathered from tests to BS 476 : Part 8. In due course data will become available from the revised testing procedures which will then be incorporated into Section 4.2 of BS 5268. The definitions and terminology of BS 476 : Part 8 will be maintained until these revisions are published.