

Superseding AS CA38—1971

AS 1684 — 1975
UDC 694.5
S1B (2)H1

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**Australian Standard
1684—1975**

**SAA LIGHT TIMBER
FRAMING CODE**

METRIC UNITS

AS 1684-1979



STANDARDS ASSOCIATION OF AUSTRALIA
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AMENDMENT No 1
to
AS 1684—1975
SAA LIGHT TIMBER FRAMING CODE

Summary: This amendment covers the Preface and Rule 3.11.7.

Page 2. Preface.

Add the following standards to the list:

AMDT
No 1
JAN.
1977

AS 1859	Flat Pressed Particleboard
AS 1860	Code of Practice for Installation of Particleboard Flooring

Page 24. Rule 3.11.7.

Delete existing Rule and substitute:

AMDT
No 1
JAN.
1977

3.11.7 Structural Sheet Flooring.

3.11.7.1 *Plywood.* Plywood having a Type A bond and complying with the requirements of AS O85* or AS O89† may be used at joist spans appropriate to the thickness as given in Table 6 herein but where used for floors suspended directly above earth the plywood shall be of the durability class prescribed for flooring timbers in Rule 3.3.

The flooring shall be laid in accordance with the following requirements:

- (a) Sheets shall be laid with the grain of their face plies at right angles to the line of the supporting joists and shall be continuous over at least two spans. Joints parallel to joists shall be staggered.
- (b) Ends of sheets shall be butted centrally over joists and edges of sheets, unless tongued and grooved, shall be joined centrally over noggings between joists, such noggings

being of timber not less than 75 × 38 mm section and set flush with top of joists.

- (c) Nails used for fixing of sheets shall be not less in length than 2.5 times the thickness of the sheet and shall be spaced as follows:

- (i) *Flat-head nails.* 150 mm centres along ends of sheets and 300 mm centres along edges.

- (ii) *Bullet-head nails.* 100 mm centres along ends of sheets and 200 mm centres along edges.

Annularly grooved nails are recommended where resilient floor coverings are to be fixed directly to plywood.

NOTE: If decorative plywood is used in platform flooring, moisture take-up during construction may impair the face qualities of the plywood unless precautions as described in Rule 3.11.5 are taken.

3.11.7.2 *Particleboard.* Particleboard flooring shall comply with the requirements for the appropriate flooring grade specified in AS 1859‡ and shall be selected and installed in accordance with AS 1860.§

NOTE: Particular attention is drawn to AS 1860—Rule 3, Selection of Board Class, for information on the suitability of the two classes for flooring grade particleboard.

Add the following footnotes:

‡ AS 1859, Flat Pressed Particleboard.

§ AS 1860, Code of Practice for Installation of Particleboard Flooring.

AUSTRALIAN STANDARD CODE OF PRACTICE

CONSTRUCTION IN LIGHT TIMBER FRAMING

known as the
SAA LIGHT TIMBER FRAMING CODE

AS 1684 — 1975

First published (as AS CA38)	1971
Revised and issued as AS 1684	1975

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST., NORTH SYDNEY (Copyright)

ISBN 0 7262 0686 5

THE FOLLOWING SCIENTIFIC, INDUSTRIAL, PROFESSIONAL AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Institute of Builders
CSIRO Division of Building Research
Experimental Building Station
Forestry Commission of N.S.W.
Forestry and Timber Bureau
Housing Trusts and Commissions
Local Government Departments
Institute of Timber Engineering
Queensland Timber Board
Registry of Co-operative Societies of N.S.W.
Royal Australian Institute of Architects
Rural Bank of N.S.W.
Sawmillers and Timber Merchants Associations
State Departments of Public Works
Timber Advisory Council of N.S.W.
Timber Development Associations
University of Melbourne
University of N.S.W.

This standard, prepared by Committee TM/6, Light Timber Framing, was approved on behalf of the Council of the Standards Association of Australia on 31 January 1975.

This code is intended to establish a minimum standard for the material and construction of light structural timber frames in residential or small commercial or industrial buildings which will be acceptable under all building codes but does not purport to comprise all the necessary provisions of a contract.

To keep abreast of progress in industry and research, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

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P R E F A C E

This standard was prepared by the Committee on Light Timber Framing as a metric revision of AS CA38—1971, which it accordingly supersedes. It is intended to provide the basic essentials for a uniform code of practice for the framing of traditional type light timber structures that will be acceptable to building authorities throughout Australia.

The tables of spans and spacings, which are issued as Supplements to the code (see list below), were prepared by the CSIRO Division of Building Research using metric member sizes as designated by the various sections of the timber industry. The basis for design used in the preparation of this code was AS 1720, SAA Timber Engineering Code.

The design loads recommended in AS 1170, SAA Loading Code, Part 1—Dead and Live Loads, were taken into account in the computations for these tables, but allowance was also made for the ability of the described methods of timber framing to distribute laterally the concentrated or localized loads given in that code so that they will be shared by a number of members. The design wind velocity used in computations was 33 m/s (basic regional velocity of 50 m/s modified for a height of 5 m in Terrain Category 3).

In all cases the programme of calculations used to obtain the maximum permissible spans for timber sections listed in the various tables was designed to obtain the greatest economy of timber consistent with the strength and stiffness required for the given use or purpose of that member. In consequence, when selecting members, particularly those of smaller cross-section, from tables of maximum span, the user is warned that it may be necessary to give close attention to factors other than load-carrying ability. The need to provide room for drillings or notchings by service trades and adequate width of grounds for jointing or fixing of linings, together with the need to ensure that sufficient width and thickness of timber are available at joints and bearings to accept the required gauge and number of fixing nails, may require the selection of members greater in size than those which are needed for structural strength alone.

As a result of a demand from users of the code, tables are provided for seasoned timbers, both softwoods and hardwoods, in a range of stress grades. This was made possible by the development of an additional strength grouping system using the same basis of assessment as for unseasoned timber but utilizing the structural properties of each species as determined in the dry condition. Table 1 shows the green and seasoned strength group classification and illustrates how both fit in with the existing stress grade system. The dry strength groups are called SD1, SD2, . . . SD8 in order of decreasing strength properties. Attention is drawn to the fact that the term 'seasoned' as defined in AS 1720, SAA Timber Engineering Code, means the condition of a piece of wood when the maximum moisture content anywhere within that piece does not exceed 15 percent.

At this juncture the only grading rules specifically available for seasoned timber are those for radiata

pine. In preparing the tables for seasoned timber it was assumed that the grading rules formulated for green timber will be applied after seasoning. It is highly likely that for technical reasons this is the procedure that will be adopted when grading rules are prepared for seasoned material.

In accordance with Standards Association policy it is not the intention that the advisory notes included in this code should be mandatory. This applies particularly where such recommendations conflict sharply with local practice which experience has shown to give satisfactory performance. Local authorities may require evidence of the soundness of the proposed construction.

Under the authority of the Association's Timber Standards Board a permanent committee has been formed to study all future comment on the code and to make the necessary revisions as the need arises. The committee comprises a central group together with one representative from other committees formed in each of the six States. Considerable success has been achieved in securing representation on the State committees from a wide cross-section of organizations, authorities and individuals throughout the country. Correspondence should be directed to this reviewing committee through the Director of SAA.

This code makes reference to a number of Australian standard specifications and codes for timber, timber products and working practices, details of which are given in the relevant sections of the code. In addition, reference may be necessary to the following standards:

- | | |
|---------|--|
| AS 1148 | Nomenclature of Commercial Timbers Imported into Australia |
| AS 1170 | SAA Loading Code
Part 1—Dead and Live Loads
Part 2—Wind Forces |
| AS 1250 | SAA Steel Structures Code |
| AS 1529 | Installation of Household Type Hot Water Supply Systems |
| AS 1538 | SAA Cold-formed Steel Structures Code |
| AS 1604 | Preservative-treated Sawn Timber, Veneer and Plywood |
| AS 1640 | SAA Brickwork Code |
| AS 1748 | Mechanically Stress Graded Timber |
| AS 1749 | Rules for Mechanical Stress Grading of Timber |
| AS CA32 | SAA Code for Concrete Block Masonry |
| AS O1 | Terms used in Timber Standards |
| AS O2 | Nomenclature of Australian Timbers |

The following Supplements are being prepared for use in conjunction with the code:

AS 1859

AS 1860

- | | | | |
|-------------|------------------------------------|-------------|---|
| Supp. No 1 | Unseasoned Timber—Stress Grade F4 | Supp. No 11 | Seasoned Softwood—Stress Grade F8 |
| Supp. No 2 | Unseasoned Timber—Stress Grade F5 | Supp. No 12 | Seasoned Softwood—Stress Grade F11 |
| Supp. No 3 | Unseasoned Timber—Stress Grade F7 | Supp. No 13 | Seasoned Hardwood—Stress Grade F11 |
| Supp. No 4 | Unseasoned Timber—Stress Grade F8 | Supp. No 14 | Seasoned Hardwood—Stress Grade F14 |
| Supp. No 5 | Unseasoned Timber—Stress Grade F11 | Supp. No 15 | Seasoned Hardwood—Stress Grade F17 |
| Supp. No 6 | Unseasoned Timber—Stress Grade F14 | Supp. No 16 | Seasoned Hardwood—Stress Grade F27 |
| Supp. No 7 | Unseasoned Timber—Stress Grade F17 | Supp. No 17 | Unseasoned Timber (Additional Sizes)—Stress Grade F4 |
| Supp. No 8 | Unseasoned Timber—Stress Grade F22 | Supp. No 18 | Unseasoned Timber (Additional Sizes)—Stress Grade F5 |
| Supp. No 9 | Seasoned Softwood—Stress Grade F5 | Supp. No 19 | Unseasoned Timber (Additional Sizes)—Stress Grade F8 |
| Supp. No 10 | Seasoned Softwood—Stress Grade F7 | Supp. No 20 | Unseasoned Timber (Additional Sizes)—Stress Grade F11 |

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STANDARDS ASSOCIATION OF AUSTRALIA

**Australian Standard Code of Practice
for
CONSTRUCTION IN LIGHT TIMBER FRAMING**

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Code provides rules for the selection, placement and fixing of the various structural timber members used in the construction of light building frames which are assembled with joints nailed in accordance with traditional practice, and describes procedures which are designed to prevent misuse of timber or creation of an environment for its use which might adversely affect the ultimate performance of the structure.

1.2 APPLICATION.

1.2.1 Framing and Fastening Methods. The framing and fastening methods prescribed in this Code apply to timber-framed structures intended to be used for domestic and light commercial or industrial purposes and on which the imposed loadings will not exceed those for which the various tables given in the Code have been prepared. The stresses used in the calculation of maximum spans for members shown in these tables were derived specifically for traditional (conventional) light timber framing and are not applicable generally to other forms of construction.

Notwithstanding the above, this Code does not restrict the introduction of other framing and fastening methods or materials where it can be shown, to the satisfaction of the Building Authority, that these satisfy the performance requirements met by the materials and methods described herein.

1.2.2 Tables of Spans and Spacings for Stress Grades. Tables of spans and spacings according to size of timber for the individual stress grades (see Rule 1.4.3) are given in Supplements to this Code. For the purposes of this Code, such Supplements shall be deemed to form part of this Code. Where referred to in the text of this Code, the tables in the Supplements have the suffix letter 'S'.

1.2.3 Use of Tables for Two-storey Constructions. Except in the case where the headings to tables of spans and spacings indicate that sections listed are specifically for use in a particular storey of two-storey constructions, it may be assumed that tables are applicable generally either to single-storey constructions or to the top storey of two-storey constructions.

1.3 PERFORMANCE. This Code defines a standard for structural framing which has been shown by experience to ensure long life and a low level of maintenance and to provide a satisfactory degree of protection and comfort for occupants of buildings to which it applies.

1.4 TERMS AND DEFINITIONS.

1.4.1 General. Terms used in describing timber in this Code shall have meanings as defined in AS O1, Glossary of Terms Used in Timber Standards, or as defined hereunder. Standard trade common names shall be those listed either in AS O2, Nomenclature of Australian Timbers, or in AS 1148, Nomenclature of Commercial Timbers Imported into Australia. Figs 1 and 2 give the nomenclature used throughout this Code to identify the various timber framing members.

In the use of tables for permissible span which form Supplements to this Code, the interpretation of the various terms used shall be as given in Rules 1.4.2 to 1.4.5.

1.4.2 Grade. 'Grade' shall mean the structural quality (grade) of a timber section which has herein been determined in accordance with the Australian Standard visual grading rules appropriate to its species, as listed in Table 1. Where no grading rules exist for seasoned timber, such material shall be graded in accordance with the visual grading rules for unseasoned timber of the same species as listed in Table 1.

1.4.3 Stress Grade. 'Stress grade' shall mean a value assigned to a piece of timber to indicate, for purposes of structural design, the set of basic stresses appropriate to that piece. The concept of stress grade has been introduced into the tables in this Code as being a convenient way of describing the combined effect which species and qualities will have on the strength of a timber section. Stress grade is designated in the form of a number preceded by the letter 'F'. For further information see AS 1720, SAA Timber Engineering Code.

1.4.4 Spacing. 'Spacing', where used in reference to structural timber members, shall mean their centre-to-centre distance apart unless otherwise indicated.

1.4.5 Span. 'Span', where used in reference to structural timber members or assemblies, shall mean the face-to-face distance between points capable of giving full support to such members or assemblies. In particular, rafter spans shall be measured as the spacing between points of support along the length of the rafter and not as the horizontal projection of this distance unless otherwise indicated.

1.4.6 High Winds. 'High winds', where used in this Code to describe conditions of exposure, shall mean situations in which the basic design wind velocity, modified for terrain and height in accordance with AS 1170, SAA Loading Code—Part 2, Wind Forces, is greater than 33 m/s.