

Particleboard —

Part 2: Specification for wood chipboard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Timber Standards Policy Committee (TIB/-) to Technical Committee TIB/14, upon which the following bodies were represented:

- British Cement Association
- British Plastics Federation
- British Woodworking Federation
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- European Structural Panel Association
- Flat Roofing Contractors Advisory Board
- Furniture Industry Research Association
- International Cement Bonded Particleboard Federation
- National Federation of Roofing Contractors
- National House-building Council
- Timber Research and Development Association
- Timber Trade Federation
- United Kingdom and Ireland Particleboard Association
- Zurich Municipal Building Guarantee

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Foreword

BS 5669 has been prepared under the direction of the Timber Standards Policy Committee. This revision supersedes BS 5669:1979, which is withdrawn.

Since BS 5669:1979 was published, the range of particleboards available has continued to grow. The format of the 1979 edition, which covered only four board types, did not permit the expansion necessary to include additional types of particleboard and this revision therefore comprises a series of Parts of BS 5669, as follows.

- *Part 1: Methods of sampling, conditioning and test;*
- *Part 2: Specification for wood chipboard;*
- *Part 3: Specification for oriented strand board (OSB);*
- *Part 4: Specification for cement bonded particleboard;*
- *Part 5: Code of practice for the selection and application of particleboards for specific purposes.*

This Part of BS 5669 specifies six types of wood chip-board in terms of their property levels rather than by types of adhesive or wood species used. Four of these were included in the 1979 edition of this standard while a further two have been added to reflect the continued development of the product. These additional types are C1A wood chipboard based on the recommended levels for chipboard in furniture given in appendix C of BS 5669:1979 (which has also been extended to cover thicker boards which were not included previously) and C5 which is a structural grade of wood chipboard.

Since publication of the 1989 edition of this standard, changes in manufacturing methods have resulted in Types C3 and C4 chipboards becoming commercially unavailable. The requirements for C3 and C4 chipboards have therefore been deleted and new grades C3 (M) and C4 (M) have been included. It should be noted that two properties (tensile strength perpendicular to the board after cyclic exposure and increase in thickness after cyclic exposure) of these grades are measured by a new test method (given in an amendment to Part 1 of BS 5669).

Protection from insect or fungal attack has not been taken into account in this Part of BS 5669, and where this is required special grades of boards should be specified.

Board sizes are not specified in this Part of BS 5669 but where there is a requirement for coordinating sizes, they should be as specified in BS 6750.

Density is not a requirement of this Part of BS 5669, but should measurement of density be required the method given in BS 5669-1 should be used.

The definition given for particleboard in 2.1 has been replaced by the definition given in clause 2 of BS EN 309:1992.

The test methods used in assessing wood chipboard are given in BS 5669-1 and are identical with those used for particleboards specified in BS 5669-3 and BS 5669-4.

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 16, 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 Scope

This Part of BS 5669 specifies requirements for six types of wood chipboard from 6 mm to 50 mm thickness, classified according to property levels rather than by the types of adhesive or wood species used (see clause 3).

Manufacturing requirements covering permitted tolerances on the sizes of boards together with mean quality levels and marking requirements are specified.

Appendix A gives guidance on within-board and between-board standard deviation.

Appendix B gives guidance on verifying compliance with this Part of BS 5669.

Methods of test for wood chipboard are not included in this Part of BS 5669 but are given in BS 5669-1.

Recommendations for the selection and application of the various types of particleboards for specific purposes are given in BS 5669-5.

BS 5669 does not cover requirements for extruded particleboard or flaxboard.

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 5669 the definitions given in BS 6100-4.3 apply except that the definition for particleboard is as given in BS EN 309. For ease of reference, this definition is repeated in 2.1.

2.1 particleboard

panel material manufactured under pressure and heat from particles of wood (wood flakes, chips, shavings, saw dust, wafers, strands and similar) and/or other lignocellulosic material in particle form (flax shives, hemp shives, bagasse fragments and similar) with the addition of an adhesive

2.2 wood chipboard

particleboard made exclusively from small particles and a binder

3 Classification

Six types of wood chipboard are specified in terms of their strength and moisture resistance.

In order to avoid confusion with grade numbers of the other types of particleboard, the six types of wood chipboard carry the prefix “C”. They are designated C1, C1A, C2, C3(M), C4(M) and C5 and are described below. Their mean quality levels, which shall not be used in design calculations without appropriate reduction factors¹⁾, are given in Table 1.

They are distinguished either by their properties and/or by their intended use as follows.

C1. Wood chipboard that is intended for general use.

C1A. Wood chipboard that has slightly higher mean quality levels for a number of properties.

C2. Wood chipboard that has enhanced mechanical properties. Although such boards are primarily suitable for the loads encountered in joisted or floating floors in domestic applications, they may also be suitable for other applications, depending on design conditions (see BS 5669-5). Unless suitable protection is provided (see BS 5669-5), these boards shall not be used in situations where their moisture content would exceed 18 % for prolonged periods after installation.

C3(M). Wood chipboard that has major improvements in moisture resistance²⁾ and increases in mechanical performance over type C1. Such board recovers an acceptable strength on reconditioning after exposure to water and/or high humidity for limited periods. It does not necessarily resist prolonged exposure to weather, attack by micro-organisms or persistent damp conditions.

C4(M). Wood chipboard that has the same degree of moisture resistance as C3(M), but with a specified impact resistance.

C5. Wood chipboard that has both enhanced moisture resistance properties and enhanced mechanical properties compared with types C3(M) and C4(M) chipboards. It is intended for structural use where full structural design or prototype testing is required.

4 Dimensional tolerances

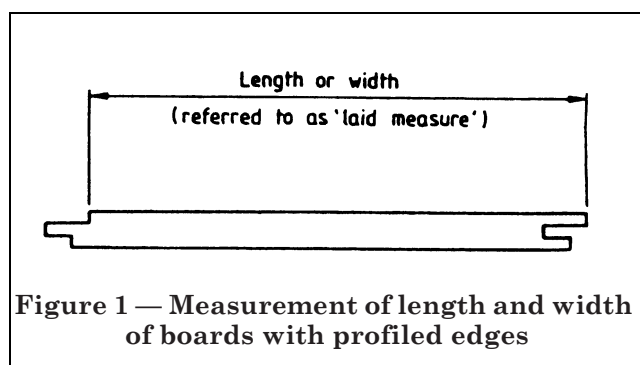
Each board shall be rectangular and shall have straight, square edges. When measured in accordance with clause 7 of BS 5669-1:1989, the appropriate dimensional tolerances given in Table 2 shall apply for each board.

¹⁾ Grade stresses and modification factors for structural wood chipboard are given in BS 5268-2.

²⁾ The requirements given in Table 1 for resistance of the cyclic test are equivalent to those for the proposed type P5 particleboard specified in EN 312-5 *Particleboards — Specifications — Part 5: Requirements for load-bearing boards for use in humid conditions*.

NOTE 1 The dimensions of boards are closely related to moisture content. If after leaving the factory the moisture content increases, the boards will expand. On drying out to the moisture content present at dispatch from the factory the dimensions may not contract to their original values. For this reason the measurement of thickness, length, width and flatness for the purpose of verifying compliance with the requirements is normally applied at or prior to dispatch from the factory.

NOTE 2 Where boards are provided with special or profiled edges, for example tongued and grooved, the area of the board is defined by the net length and width of the top face of the board excluding the additional width of the profile as shown in Figure 1.



5 Strength, elasticity, swelling, resistance to impact and extractable formaldehyde content

The quality of production for each type of wood chipboard shall be maintained at such a level that the mean values for the properties given in Table 2 for boards up to 50 mm in thickness, when tested in accordance with BS 5669-1, shall be not inferior to, or greater than in the case of thickness swelling, the mean values given in Table 1 for the type of board.

The strength values given in Table 1, Table 3 and Table 4 shall not be used for structural design purposes without appropriate reduction factors.

The variability of quality levels shall be not greater than is given in Table 3 for each type of board. If, however, a greater mean value indicates an improvement in quality (other than for thickness swelling) proportional increases in values of between-board standard deviation, σ_B , within-board standard deviation σ_w and mean range shall be permitted. Within-board standard deviation (σ_w) and between-board standard deviation (σ_B) for bending strength and modulus of elasticity are given in Table 5.

NOTE Relevant limits for manufacturers' control charts for all board types are given in Table 3 and consumers' acceptance limits are given in Table 4.

The time required to carry out the tests for tensile strength perpendicular to the plane of the board after the cyclic test, and for extractable formaldehyde content is too long to allow these two tests to be used in routine quality control procedures. Manufacturers shall therefore measure these properties at appropriate intervals in order to provide assurance of compliance to customers.

6 Freedom from foreign matter

The boards shall be free from metal and stone particles which might cause injury to operatives and/or excessive damage to woodworking tools.

7 Moisture content

When tested in accordance with clause 9 of BS 5669-1:1989 the moisture content of the boards on leaving the place of manufacture shall be not less than 5 % and not more than 13 %.

8 Thermal conductivity

When tested in accordance with BS 874-2.1 thermal conductivity shall be not greater than 0.14 W/(m K).

9 Surface spread of flame

When tested in accordance with BS 476-7, the surface spread of flame on the board shall be not inferior to that specified for class 3.

10 Marking

Each board shall be clearly and indelibly marked by the manufacturer, either by direct printing or by an adhesive label, with the following information:

- the number and date of this British Standard, i.e. BS 5669-2:1989³⁾;
- the manufacturer's name, trade mark or identification mark;
- the type of board, i.e. C1, C2, C3(M), C4(M) or C5.

³⁾ Marking BS 5669-2:1989 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

In the case of boards of type C1A, the manufacturer shall provide the information given in items (a) to (c) above in the form of a certified document relating to each individual consignment.

In addition all boards shall be colour coded at the time of manufacture by applying a coloured stripe to either the two long or two short edges of the board. The stripes shall be at least 25 mm wide and applied near diagonally opposite corners. The code for each type of board shall be as follows.

Type	Code
C1	Black
C1A	Two black stripes, separated by not less than 25 mm
C2	Red
C3(M)	Green
C4(M)	Red and green, separated by not less than 25 mm.
C5	Yellow and green, separated by not less than 25 mm.