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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 165, *Timber structures*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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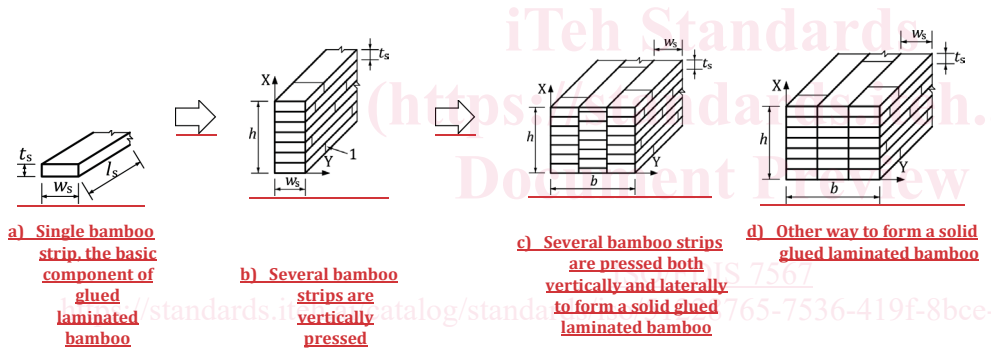
Introduction

Glued laminated bamboo is produced by bonding together several bamboo strips with their fibres parallel to each other. A member with a rectangular or non-rectangular solid cross-section can be produced through this manufacturing process.

The purpose of the requirements in this document is to provide minimum product specifications to achieve adequate in-service performance of glued laminated bamboo building structures.

Figure 1 shows the typical manufacturing steps of glued laminated bamboo. Figure 1 a) shows a single bamboo strip (also known as 'lamina') with rectangular cross section ($w_s \times t_s \times l_s$ as shown in Figure 1 a) which is typically lengthened by adding bamboo strips using non-structural joints (see 6.1). Figure 1 b) shows a multiple layered glued laminated bamboo "board" (having width w_s and height h) component that results from bonding together bamboo strips. The boards are subsequently assembled into glued laminated bamboo components (having width b and height h) as shown in Figure 1 c) and Figures 1 d). The layup shown in Figure 1 c) is the commonly used glued laminated bamboo arrangement. Other arrangements permitted by this document are shown in Figures 1 d).

When producing multiple-board glued laminated bamboo, care shall be taken that the splice joints in adjacent boards are staggered by at least the greater of $10w_s$ and $2h$ (see Figure 2).



Key
1 splice joint

Figure 1 — Key manufacturing process for the products covered by this document

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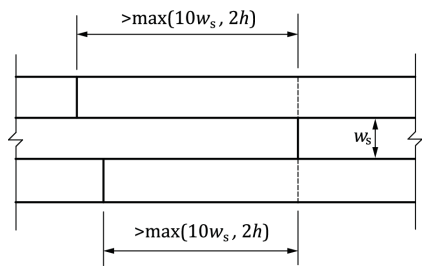
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Figure 2 — Requirement for the staggering of splice joints in adjacent boards in the longitudinal direction

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Bamboo Structures—structures — Glued laminated bamboo

Product specificationsspecifications

1 Scope

This document specifies requirements for the components of glued laminated bamboo members intended for structural use.

Although currently most glued laminated bamboo is made from *Phyllostachys edulis* (Moso), this document also applies to other bamboo species (e.g. *Guadua angustifolia*, *Dendrocalamus asper*) if the performance required by this document can be shown to have been achieved.

The basic requirements apply to structural members of all service classes; however, special precautions are necessary for service class 3, for example, the use of weather resistant adhesives (see 5.2)–5.2).

Annex CAnnex C contains informative references for formaldehyde emission.

The requirements will need to be supplemented to take into consideration any relevant special conditions as well as material and/or functional requirements.

Figure 1 shows the typical manufacturing steps of glued laminated bamboo. Figure 1(a) shows a single bamboo strip (also known as ‘lamina’) with rectangular cross section ($w_s \times t_s \times l_s$ as shown in Figure 1 a) which is typically lengthened by adding bamboo strips using non structural joints (see 6.1). Figure 1 (b) shows a multiple layered glued laminated bamboo “board” (having width w_b and height h) component that results from bonding together bamboo strips. The boards are subsequently assembled into glued laminated bamboo components (having width b and height h) as shown in Figure 1(c) and Figures 1(d). The layup shown in Figure 1(c) is the commonly used glued laminated bamboo arrangement. Other arrangements permitted by this document are shown in Figures 1(d).

When producing multiple board glued laminated bamboo, care shall be taken that the splice joints in adjacent boards are staggered by at least the greater of $10w_s$ and $2h$ (Figure 2).

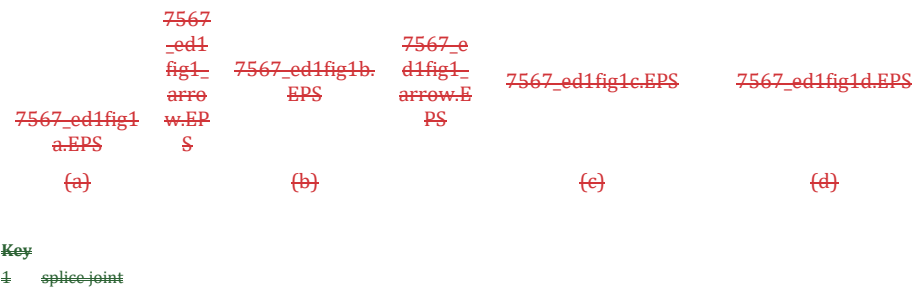


Figure 1 — Key manufacturing process for the products covered by this document

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(a) A single bamboo strip, the basic component of glued laminated bamboo; (b) several bamboo strips are vertically pressed; (c) several bamboo strips are pressed both vertically and laterally to form a solid glued laminated bamboo; (d) the other way to form a solid glued laminated bamboo.

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Figure 2 — requirement for the staggering of splice joints in adjacent boards in the longitudinal direction

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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<std>ISO 21625:2020, Vocabulary related to bamboo and bamboo products</std>

<std>ISO 12579, Timber structures — Glued laminated timber — Method of test for shear strength of glue lines</std>

<std>ISO 12580, Timber structures — Glued laminated timber — Methods of test for glue-line delamination</std>

<std>ISO 20152-1, Timber structures — Bond performance of adhesives — Part 1: Basic requirements</std>

<std>ISO 12579, Timber structures — Glued laminated timber — Method of test for shear strength of glue lines

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ISO 20152-1, Timber structures — Bond performance of adhesives — Part 1: Basic requirements

ISO 21625, Vocabulary related to bamboo and bamboo products

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21625 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1 bamboo failure percentage

At the plane of shear failure, the ratio of failed bamboo material to the total failure surface expressed as a percentage.