

Instructions for the Use of Glued Laminated Timber

The purpose of this document is to provide practical guidance for the receipt, storage, handling, use and installation of glued laminated timber.

Important: Glued laminated timber is a structural material. Its properties depend on moisture conditions, transport, storage and installation conditions. Throughout the supply chain, the material must be protected from excessive moisture, condensation, UV exposure and mechanical damage.

1. SCOPE OF USE AND MAIN CHARACTERISTICS

Glued laminated timber is suitable for load-bearing structures, including beams, columns, roof supports, walls, floors, and structural elements for sports halls, warehouses, office and industrial buildings, and other large-span structures.

The advantages of glued laminated timber include high strength combined with low self-weight, good dimensional stability, the possibility of producing long spans, and a high level of prefabrication, which reduces noise, dust and installation time on site.

The source document refers to EN 14080:2013 as the applicable product standard. Strength classes may depend on the order and the product, for example GL24c/GL24h, GL28c/GL28h, GL30c/GL30h, and by special order GL32c/GL32h.

2. RECEIPT OF THE MATERIAL ON SITE

Upon receipt, the delivery must be checked against the order: cross-sections, lengths, quantities, strength class, surface quality, and any special shapes or CNC processing.

The condition of the packaging must be inspected. The transport film mainly protects against dirt and splash water, but it is not suitable for long-term storage. After receipt of the goods, the film must be removed as soon as possible in order to prevent condensation.

If the product has transport damage, signs of wetting, or visible dimensional deviations, these must be recorded immediately upon receipt and reported to the supplier before installation.

When assessing visual quality, the evaluation must be based on the surface condition at the time of delivery.

3. STORAGE

Glued laminated timber must be stored on a level and stable base, above ground level, and in such a way that the elements do not come into contact with standing water, snow, or ground moisture.

The material must be protected from precipitation while at the same time allowing air circulation. Completely sealed covering may cause condensation and increase the risk of moisture damage.

For long-term storage, the factory transport film must not be left around the elements. If necessary, use a breathable protective cover or shelter.

During storage, point supports, uneven sub-surfaces, and situations where an element may deflect under its own weight must be avoided. Supports must be aligned in a straight line.

If the material is exposed to a damp environment during the construction phase, it must be dried gradually by means of sufficient ventilation and, if necessary, careful heating.

4. HANDLING AND TRANSPORT ON SITE

Suitable lifting equipment must be used during lifting and handling, and damage to edges, corners and visible surfaces must be avoided.

Long or curved elements must be lifted in a manner that avoids twisting and local overloading. If necessary, use multiple lifting points.

For non-standard dimensions, transport restrictions must be taken into account. Elements longer than 13.60 m, wider than 2.40 m, or higher than 2.60 m may require special transport.

Unloading on site must be planned in advance: whether a crane or forklift will be used, whether the access route can carry the load, and whether the installation sequence of the elements is aligned with the delivery.

5. CONDITIONS OF USE

The standard wood moisture content of glued laminated timber at the time of production is approximately 16% (+ / - 2%). The dimensions of the material change with changes in ambient moisture conditions, and therefore the installation environment must correspond to the intended conditions of use.

Glulam is a high-quality structural material that is often left visible in architectural applications. As a natural wood product, it may show small cracks or dimensional movement due to humidity changes. These characteristics are normal for timber and do not affect structural performance.

Direct exposure to weather or highly fluctuating climatic conditions increases the risk of cracks and surface changes.

6. INSTALLATION AND USE

During installation, it must be ensured that glued laminated timber is not left in permanently wet or condensing conditions. Where necessary, use structural weather protection, roof overhangs, flashings, or surface protection.

If cuts, openings, or other modifications are made to the elements on site, their impact on load-bearing capacity and moisture behaviour must be assessed. If necessary, the processed areas must be protected.

For curved elements, restoring forces must be taken into account, depending on the radius and the number of laminations.

For high-precision serial elements, it is recommended to use factory CNC-processed solutions. This reduces installation errors and ensures better dimensional accuracy.

7. CRACKING, SWELLING AND SHRINKAGE

Wood is a hygroscopic material: it absorbs and releases moisture according to the surrounding environment. As a result, dimensional changes may occur both in height and in width.

According to the source document, the shrinkage and swelling ratio of glued laminated timber is approximately 0.24% for each 1% change in wood moisture content across the cross-section; the change in length is usually small and mostly negligible.

Shrinkage cracks may occur both on the surface and in the areas of the glue lines. If no transverse tension is present in the structure, cracks can generally be tolerated up to approximately one-sixth of the element width on each side.

To prevent cracking, construction moisture must be removed gradually, rapid drying must be avoided, and ventilation must be ensured.

8. QUALITY REQUIREMENTS AND VISUAL CHARACTERISTICS

Glued laminated timber may be supplied in visual quality (VI) or non-visual quality (NVI). Visual quality is intended for visible spaces; non-visual quality is intended for areas where appearance is not decisive.

In visual quality, rough planed areas are not permitted, but planer marks up to 1 mm deep are allowed. In non-visual quality, planer marks are generally permitted.

Blue stain and red streaks may be permitted to a limited extent. Resin pockets, pith, small insect bore holes, and shrinkage cracks of certain sizes may be permitted depending on the quality class.

Due to the natural character of wood, visual changes may occur after delivery. Therefore, when assessing appearance, production and delivery quality must be distinguished from the effects of later conditions of use.

9. DIMENSIONAL TOLERANCES

According to the document, the dimensional tolerances for straight elements are based on EN 14080:2013, with 16% wood moisture content as the reference condition.

Width 60 - 300 mm: tolerance + / - 2 mm.

Height 100 - 400 mm: tolerance +4 / - 2 mm.

Height 400 - 2500 mm: + 1% / - 0,5%.

Length under 2 m: + / - 2 mm; 2 m to under 20 m: + / - 0.1%; over 20 m: + / - 20 mm.

For curved elements, accuracy also depends on whether the element has been finally CNC-processed. The deviation in rise may be up to + / - 2 mm for each metre of arc length.

10. FIRE RESISTANCE AND ENVIRONMENTAL CONDITIONS

The calculated charring rate of glued laminated timber is 0.7 mm/min in accordance with EN 1995-1-2, Table 3.1.

The source document states that wood retains a greater proportion of its strength in the initial phase of a fire compared with steel, but fire resistance verification must always be based on structural calculation.

The formaldehyde emission class is E1, and thermal conductivity depends on the direction of the grain and the glue lines.

11. MAINTENANCE AND INSPECTION

After installation, the elements must be checked regularly to ensure that they have not been subjected to permanent moisture exposure, damage to surface coatings, or mechanical impacts.

Particular attention must be paid to joints near external envelopes, supports located under roofs, water drainage areas, and places where moisture may accumulate at the contact between wood and metal.

If the structure has a visible surface quality, unsuitable cleaning or sanding methods that alter the surface appearance must be avoided during use.

12. QUICK CHECKLIST FOR THE SITE

Checkpoint	What to check	Result
Receipt	Quantity, dimensions, surface quality, visible damage	—
Packaging removal	Transport film removed, no condensation present	—
Storage	Supports straight, elements off the ground, breathable protection	—
Moisture conditions	Material not permanently wetted and not enclosed under film	—

Installation	Lifting and installation methods do not damage edges or surfaces	_____
Joints	Joints at moisture risk protected, water drainage resolved	_____
Final inspection	Cracks, bends, surface damage and openings checked	_____

13. SOURCE AND NOTE

This guide has been prepared on the basis of the technical product brochure provided by the user. The original source contains the manufacturer's technical information and states that binding requirements must be confirmed on the basis of the specific quotation, order confirmation, and design data.