

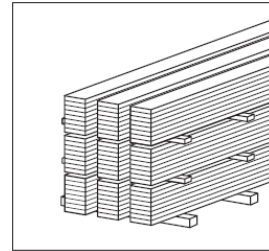
## Important information for the Appropriate Handling of Glued Laminated Timber

Glued laminated timber is a processed construction material which is made of natural timber. Please find below some general rules which help to safeguard the longevity of a timber construction and help to preserve its excellent optical appearance.

## HESS TIMBER GmbH

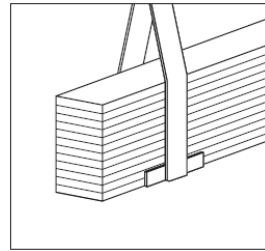
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### STACKING



Use footboards and stacking plates. Protect timber against tilting.

### DAMAGES



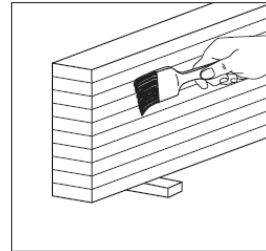
Use broad lifting straps and edge protectors. Avoid damages.

### HUMIDITY



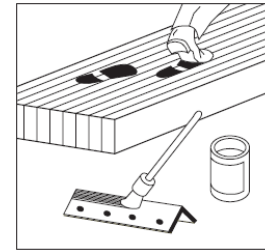
Protect the timber against humidity by using covering sheets. Remove transport packaging immediately because of condensation risk.

### WEATHER PROTECTION



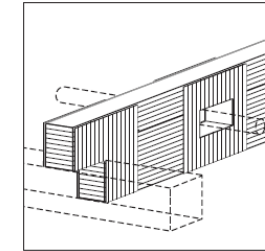
Mind timber preservation by suitable construction principles! Additionally: Impregnation against humidity on short-term weathering as temporary protection during construction.

### STAINING



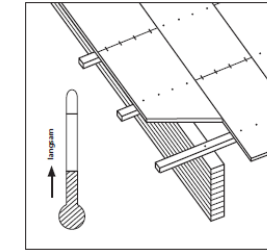
Avoid staining, e.g. by impregnation, covering etc. Avoid stains resulting of impregnation salts and rusting steel parts.

### NOTCHES / OPENINGS



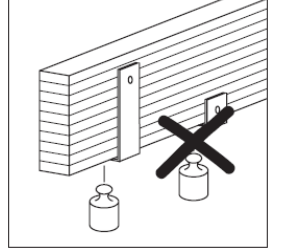
Constructive formations of openings based on structural proof. Construction only by the glulam manufacturer.

### ROOF COVERING / HEATING



Fast covering of the building avoids wet and later cracks. Dry the building with due caution (heat). Keep distance between heat source and glulam building component.

### ADDITIONAL LOADS



Additional loads have to be proved by a static calculation. Loads have to be passed in from above. Avoid any tensile stress perpendicular to the grain.

## PREPARATION AND PLANNING

- ➔ If the timber construction is unprotected against weather conditions, the application of an effective preservative treatment for the structural elements has to be considered during the planning process.
- ➔ With regard to the handling of the connection elements the swelling- and shrinkage properties of timber should always be considered, besides the aspects of the static calculation.

## TRANSPORT AND ASSEMBLY

- ➔ It is very important to avoid staining of the glulam members because the cleaning procedure is very complicated and, in most cases,, a few persisting vestiges of soil remain visible. Slight stainings and impressions of the surfaces are inevitable and hence permitted.
- ➔ Due to the large dimension of glulam beams in combination with a small sideways stiffness, it is necessary to care for proper storage, tilt protection and bracing during transport, interim storage and erection.
- ➔ In order to avoid that the edges of the beams are damaged, heavy-weight lifting straps and edge protectors should always be used for the lifting of the material.
- ➔ With regard to the assembly and erection, it is important that the glulam members are adjusted accurately, so that unintentional eccentricities can be prevented. If this is ignored, there may be the risk of extensive additional stressing which has not been considered in the static calculation.
- ➔ Any drillings or cuts, that seem to be necessary for the assembly, may only be implemented after consulting the structural engineer.
- ➔ The roof- and external wall areas have to be closed rapidly after the timber construction has been completed, in order to avoid that the timber absorbs too much humidity.
- ➔ It is strongly recommended that transport packaging is removed promptly, because otherwise perspiration water may accumulate within the wrapping, resulting in in mould or blue stain attacks. Afterwards, the structural members have to be covered appropriately, so that they are protected against staining and moisture penetration.
- ➔ If trapezoidal roof coverings have been applied, the adjoining beams may be stained by rainwater and cylinder lubricant. This effect can be prevented, if the trapezoidal roof coverings are drilled in the middle, so that the rainwater and the lubricant cannot come into contact with the beam. In order to avoid the staining of the beams it may also help to insert sealing tapes into the joint.

## IMPLEMENTING

- ➔ In heated buildings, it is important to increase the room temperature only slowly so that a balance between the moisture content within the glulam beams and the atmospheric moisture can be reached. The building owner has to be notified about this at the final acceptance of the construction work.
- ➔ With regard to the supporting structure of a hall or a timber building the customer has to guarantee normal climatic conditions. He has to ensure that the surrounding temperature is neither too humid nor extremely dry over a longer period. In terms of structural physics it is important that the roof construction has been designed in such a manner that neither harmful condensation can dispose on the roof girders, nor the roof construction can dehumidify immediately.

## MAINTENANCE

- ➔ Shrinkage cracks may appear on the surface of glulam members or alongside the adhesive joints. For structural members without systematic strain on the transverse tensile these shrinkage cracks can be tolerated up to a depth of 1/6 referring to the width of the structural members; for structural members with a regular strain on the transverse tensile, they can be tolerated up to a depth of 1/8 referring to the width of the structural member.
- ➔ Before any paint work is renewed or repeated, it has to be clarified with the manufacturer of the glulam beams that the impregnation is compatible with the gluing of the beams.
- ➔ If the timber construction is exposed to weather conditions, it may be necessary to renew or repeat the paint work. The best time to do this is during the summer months. Furthermore, it is important that the impregnation can permeate deeply into the shrinking cracks, if existing.

## MODIFICATIONS

- ➔ Any modification that may have an effect on the static system or the load bearing capacity of the construction has to be coordinated with the structural engineer in advance; as well as any further applications that may weaken the cross sections (e.g. drillings).
- ➔ It has to be taken into account that dependent structures shall be applied only in the upper parts of the girders.
- ➔ It is of particular importance that any modifications that may have an effect on the basic conditions of the construction, e.g. additional sheathings, intermediate ceilings, planking etc. shall only be implemented after the structural engineer has been consulted.