

IMPORTANT INSTRUCTIONS FOR USE OF KLH ELEMENTS IN VISIBLE SURFACES

General information regarding the construction material timber

The construction material timber can look back on an ancient tradition and is highly valued because of its properties and the room climate it brings about. Comfortableness, wellbeing, a feeling of security and harmony with nature are important arguments both for private and for public builders.

Wood is always unique

Among other things, wood has hygroscopic properties and is not homogeneous in its structure and visual appearance – every wood laminate per se is unique.

Thanks to the progress in techniques and the most diverse production technologies, there are many different possibilities to use wood – be it as 50 years old directly weathered shingle on the roof, as statically effective supporting structure of an 8-storey residential building or as finest veneer with a thickness of 0.8 mm for the furniture industry.

Independent of the manner wood is processed and manufactured – its properties remain always the same.

Impacts of the hygroscopic properties

The hygroscopic property is, on the one hand, an essential factor for a comfortable room climate, but on the other hand, it is also responsible for wood changing its volume when absorbing or releasing humidity. This is called swelling and shrinking of wood.

Change of wood humidity and impacts on the visible surface

In the production of KLH solid cross-laminated timber boards, the process of swelling and shrinking is reduced to a virtually negligible extent through the gluing of technically dried wood laminates with a wood humidity of 12% (+/- 2%).

During assembly or in the shell construction phase, KLH solid cross-laminated timber boards are subjected to season- and site-related climate fluctuations. Thus the wood humidity in the KLH solid cross-laminated timber boards can change – depending on the duration of this phase.

As soon as a building is used, the wood humidity adjusts to an average of about 8 – 11 %, depending on the air humidity prevailing in the building.

This process that can take up to about 3 years has no influence on the load-bearing capacity of the elements, can, however, result in a change in the appearance of the surface due to the properties of wood as a natural construction material. Cracks and/or gaps may appear.

Interaction between structure of the board, load-bearing capacity and thickness of the cover laminate

KLH solid cross-laminated timber boards are used as structural construction elements for walls, ceilings and roofs. As such they meet the essential static and structural-physical requirements.

The visible surface per se is a possible additional aspect of aesthetics.

The stronger the edge or cover laminate, the higher the load-bearing capacity of the KLH component. For this reason, cover laminates of 19 – 34 mm are used for surfaces in quality for living spaces, depending on the board type. What has a positive effect on the load-bearing capacity, may have a negative effect on the appearance because of possible formation of cracks and gaps.

Essentially the same applies as in the furniture industry – the thinner the edge or cover laminate, the more uniform is the appearance in the visual surface.

As KLH elements are mainly used as load-bearing components, visual surfaces of KLH solid cross-laminated timber boards cannot be compared with visual surfaces from the furniture industry.

Fluctuations in the room climate

When there are fluctuations in the room climate (e.g. change of air humidity or indoor temperature), the material wood assumes a compensating function – either by absorbing air humidity or by releasing wood humidity.

In case of abrupt fluctuations, it may happen that more humidity is released on the surface than can actually be supplied to the outside from within the core of the board.

This results in tensions on the surface that can lead to gaps and/or cracks – depending on the thickness of the edge or cover laminate. Especially with surfaces glazed in a light colour (white), there is a more pronounced contrast in the appearance of cracks and/or gaps.

Recommendations from KLH Massivholz GmbH

- Wood is a natural, non-homogenous construction material – please point out the properties of wood to your customers
- Apply utmost care in the handling and assembly of visible KLH elements
- Instruct all subsequent trades during the construction phase
- High fluctuations in the room climate are to be avoided as much as possible, both in the construction phase and at the start of building utilisation
- Keep air humidity in the building at 40 – 60 % in order to preserve the 12% (+/- 2%) wood humidity in the KLH solid cross-laminated timber boards (e.g. air humidifier, portable fountain, plants, ...)
- The formation of cracks and/or gaps cannot be excluded even with the most careful handling of KLH solid cross-laminated timber boards; particularly with light and/or white glazed surfaces, there may be an undesired contrast due to crack/gap formation

Note:

These Instructions for Use are intended for architects/planners as well as building contractors. Please pass on relevant information to builders or refer them to our website www.klh.at