BIOLOGICAL AND CHEMICAL DURABILITY

Metsä

Kerto® LVL

Resistance against weather and uv radiation

Kerto® LVL products can be used in service classes 1 and 2 as defined in the standard EN 1995-1-1. The product should not be used in service class 3 without additional protective treatment. End-use conditions are also descripbed as use classes in standard EN 335. Correspondance between sevice classes and use classes are presented in Table 1. The designer should pay attention to the details of the construction and ensure that no water pockets will be formed.

TABLE 1. SERVICE CLASSES AND THEIR POSSIBLE CORRESPONDING USE CLASSES

Service class according to EN 1995-1-1	Possible corresponding use class according to EN 335:2012
Service class 1	Use class 1
Service class 2	Use class 1 Use class 2 if the component is in a situation where it could be subjected to occasional wetting caused by e.g. condensation
Service class 3	Use class 2 Use class 3 or higher if used externally

Source: EN 335, Durability of wood and wood-based products - Use classes: definitions, application to solid wood and wood-based products

During construction Kerto LVL products and structures resist well temporary exposure to water. No decay will form provided that the products and structures are allowed to dry afterwards.

The colour of wood products change due to UV radiation from the sun, thus also untreated surfaces of Kerto LVL slowly fade to grey when exposed to UV radiation. This phenomenon does not have an effect on the strength properties of the products.

Resistance against fungi and mould

Decay process causes wood based products to soften and loose their strength. Natural durability of Kerto LVL products is class 5 according to standard EN 350 (scale from 1 very durable to 5 non-durable). Heartwood of the wood raw material used for Kerto LVL has natural durability class 4. As Kerto LVL includes also sapwood (class 5), natural durability class for final product is 5.

Phenol formaldehyde glue bond is not weakened by fungi or micro-organisms.

Outdoor use or use in high relative humidity conditions may cause mould growth on the surface of Kerto LVL. If these conditions are expected, Kerto LVL product can be ordered with MouldGuard surface treatment, otherwise a brushed or sprayed surface treatment should be applied. These surface treatments have no adverse effects to the structural properties of Kerto LVL.

Mould growth due to excessive wetting on the surface of Kerto LVL may be removed by sanding. After removal of mould growth, Kerto LVL member should be surface treated against mould growth.

Local authorities may require Kerto LVL products to be treated against biological attack. Possible adverse effects of the treatment on other properties shall be clarified separately with the treatment provider.

- **Kerto LVL products should be protected against moisture during storage and construction.**
- **There is always a risk of mould growth on the surface of untreated wood products when they are located in high relative humidity conditions or in an unheated space where the humidity of the air may be high and condensation may occur from time to time. Kerto LVL with MouldGuard treament is recommended to be used in such conditions.**
- **Biological durability of Kerto LVL products is highly dependent on the designed structures. The effect of the structure and its delimits must always be taken into account. Also, the possible moisture coming from other structural parts should be taken into account, for example from concrete cast.**

Chemical durability

The main components of wood: cellulose and lignin, react in opposite ways to acids and alkalinity. Cellulose is not very resistant to strong acids, but its resistance to bases is good. Lignin, on the other hand, is easily dissolved in bases, whereas it is resistant to most strong acids. For these reasons, the wood substance is quite resistant to moderate chemical effects. In more detail, the following comments can be made:

- Kerto LVL is resistant to many weak acids and acid saline solutions. Alkaline solutions soften the wood and cause it to swell.
- Acidic substances have a destructive effect on wood. Direct contact with chlorine, hypochlorite and nitrates should be avoided.
- Wood is generally quite resistant to organic substances. However, organic solvents such as acetone, benzene, alcohol etc. dissolve resins, fats and waxes, causing some swelling and reduction in strength properties.
- Kerto LVL has good resistance to fuel and oil. They only causes some discoloration.
- If reaction to a chemical is not known or the contact is long-term, each case shall be verified separately.
- Potential of wood corrosion due to air pollution must be checked separately.