

# Kerto® LVL

## Q-panel



Kerto® LVL Q-panels combine excellent technical performance with ease of use.

Kerto LVL Q-panel is a cross bonded panel product with appx. 20 % of the veneers glued in a crosswise direction. It is designed to be used as a load-bearing, bracing and structure-stabilizing product. It is also dimensionally stable and has an excellent strength-to-weight ratio. Kerto LVL Q-panel is an ideal choice for wooden applications such as floor, wall and roof elements; roof and wall panels; pre-fabricated houses. It can also be cut to size and used as column and beam structures.

Kerto LVL Q-panel is made of 3 mm thick softwood veneers and cross bonded with weather- and boil-resistant phenol formaldehyde adhesive.

Kerto LVL Q-panels and beams can be used as both horizontal and vertical bearers in various construction applications. Due to the crosswise veneers, the transverse strength and stiffness of the panel is enhanced.

### MAIN APPLICATIONS

- Components for roof, floor and wall elements

#### Structural applications:

- Panel product for roof, floor and wall constructions
- High beams
- Lintels and header beams
- Frames
- Roof and floor panels for box elements with Kerto LVL S-beams

#### Industrial applications:

- Free shaped beams and panels (CNC machining)
- Pre-fabricated roof, floor and wall elements and modules
- Special industrial products; concrete products, windows and doors

### MAJOR ADVANTAGES

- Strong and rigid
- Time saving: large panel product for floors, roofs and walls covers vast areas much faster than normal sized plywood panels
- High and thin beams for energy efficient constructions
- Dimensionally stable; does not warp or twist
- Customized product dimensions with minimum waste, material costs and time on construction site
- Easy to design using our free Finnwood design software
- Excellent strength-to-weight ratio
- Great workability; easy to fasten, nail and drill
- Natural material: sustainable Nordic Wood
- PEFC certified
- Environmentally friendly
- Kerto LVL (1 m<sup>3</sup>) contains the stored carbon equivalent of 789 kg CO<sub>2</sub>

### APPROVALS

Kerto LVL Q-panel is CE marked and the characteristic properties are determined according to EN 14374 for structural design. Kerto LVL Q-panel has VTT Certificate 184/03 and national approvals in Germany, Norway, USA, Australia and Japan.

Kerto LVL production is managed according to the principles of ISO 9001. The quality and the constancy of the performance of the product is controlled by regular inspections and audits.

### PACKING

Products are packed in moisture-resistant plastic wrapping or packing hoods. Packages can be stored outside temporarily. Longer-term storage is recommended under cover in dry conditions.

### STANDARD SIZES

Thickness (mm)	WIDTH (mm)								
	200	225	260	300	360	400	450	500	600
27	Kerto®	Kerto®							
33	Kerto®	Kerto®	Kerto®						
39	Kerto®	Kerto®	Kerto®	Kerto®					
45	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®				
51	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®			
57	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®		
63	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	
75	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®	Kerto®

Special dimensions available on request – there may be requirements for minimum quantities of special dimensions. Special surface veneer grades available on request (visually and optically graded).

### OVERALL DIMENSIONS

	MINIMUM (mm)	MAXIMUM (mm)
<b>Length</b>	2000*	25 000**
<b>Width</b>	200	2500
<b>Thickness</b>	21	75

\*Short lengths (< 2000 mm) and widths under 200 mm on request

\*\* When product width wider than 1830 mm, maximum length 20 000 mm

### TOLERANCES\*

	SIZE (mm)	MINIMUM (mm)	MAXIMUM (mm)
<b>Thickness</b>	≤ 27 mm	-1,0 mm	+1,0 mm
	27 < t ≤ 57 mm	-2,0 mm	+2,0 mm
	t > 57 mm	-3,0 mm	+3,0 mm
<b>Height</b>	< 400	-2,0 mm	+2,0 mm
<b>Width</b>	> 400	-0,5 %	+0,5 %
<b>Length</b>	All	-5,0 mm	+5,0 mm

\*In moisture content of 10 ±2 %. Special tolerances on request.

### PANEL CONSTRUCTIONS

Nominal thickness mm	Number of plies	Lay-up
21	7	I-III-I
21	7	II-I-II
24	8	II-II-II
27	9	II-III-II
30	10	II-III-II
33	11	II-III-II
39	13	II-III-III-II
45	15	II-III-III-II
51	17	II-III-III-II
57	19	II-III-III-III-II
63	21	II-III-III-III-III-II
69	23	II-III-III-III-III-II
75	25	II-III-III-III-III-II

Special constructions are available on request.

### FURTHER PROCESSING

Kerto LVL Q-panel can be further processed in many different ways according to end-use and customer requirements.

<b>Sanding</b>	Optical sanding (1-side and 2-side); Calibrated sanding (limited availability for 21 mm products)
<b>Edge profiling</b>	Tongue and groove, half lap
<b>Machining</b>	Beams machined to special size and shape; notches and holes
<b>Multiple glued</b>	Heavy duty beams from 78 mm up to 144 mm
<b>Temporary weather protection</b>	WeatherGuard
<b>Fire protection</b>	FireResist (B-s1,d0)
<b>Mould protection</b>	MouldGuard

### DESIGN VALUES AND PHYSICAL PROPERTIES

Bending strength		Q-panel 21-24 mm	Unit
Edgewise (depth 300 mm)	$f_{m,0,edge,k}$	28,0	N/mm <sup>2</sup>
Flatwise, parallel to grain	$f_{m,0,flat,k}$	32,0	N/mm <sup>2</sup>
Bending strength		Q-panel 27-75 mm	Unit
Edgewise (depth 300 mm)	$f_{m,0,edge,k}$	32,0	N/mm <sup>2</sup>
Flatwise, parallel to grain	$f_{m,0,flat,k}$	36,0	N/mm <sup>2</sup>
Modulus of elasticity 21-24 mm			
Parallel to grain	$E_{0,mean}$	10000	N/mm <sup>2</sup>
Modulus of elasticity 27-75 mm			
Parallel to grain	$E_{0,mean}$	10500	N/mm <sup>2</sup>
Perpendicular to grain, edgewise	$E_{90,edge,mean}$	2400	N/mm <sup>2</sup>
Perpendicular to grain, flatwise	$E_{90,flat,mean}$	130	N/mm <sup>2</sup>
Other properties			
Characteristic density (5%)	$\rho_k$	480	kg/m <sup>3</sup>
Mean density	$\rho_{mean}$	510	kg/m <sup>3</sup>
Moisture content (on mill delivery)		10 (±2)	%
Performance in fire, charring rate	$\beta_n$	0.7	mm/min
Reaction to fire class		D-s1,d0	

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## FORMALDEHYDE EMISSIONS

Determined according to EN 717-1, the formaldehyde emitted by Kerto LVL Q-panel falls far below the Class E1 requirement of  $\leq 0,100$  ppm, and also fulfils the most stringent requirements in the world ( $\leq 0,030$  ppm). The formaldehyde emission of Kerto LVL Q-panel is approximately 0,018 ppm.

## FURTHER INFORMATION

- Kerto Manual ([www.metsawood.com/kertomanual](http://www.metsawood.com/kertomanual))
- Kerto LVL Q-panel Declaration of Performance ([www.metsawood.com/dop](http://www.metsawood.com/dop))
- VTT Certificate 184/03

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