

MULTIPLE GLUED KERTO

By multiple gluing larger product thicknesses can be manufactured than in Kerto LVL production lines, where maximum thickness is 75 mm. Both Kerto-S and Kerto-Q products can be multiple glued.

Multiple glued Kerto products are covered by European Technical Assessment ETA-13/0504 and they are CE-marked based on that. In multiple gluing two or more Kerto lamellas are glued together. Multiple gluing can be made by vacuum press or glulam press using polyurethane or melamine glue.

MULTIPLE GLUED DIMENSIONS

In Lohja Kerto Mill multiple glued Kerto beams and panels can be effectively manufactured up to cross-section size 144 x 1800 mm (thickness x width). Maximum length is 18 meters.

Table 1. Standard thicknesses of multiple glued Kerto products produced from Lohja Kerto mill.

		Multiple glued standard thicknesses (mm)	
Unsanded lamella (mm)	Calibrated lamella (mm)	Kerto-S, 2 lamellas	Kerto-Q, 2 lamellas
45	42	84	84
48	45	90	
51	48	96	96
54	51	102	
57	54	108	108
60	57	114	
63	60	120	120
66	63	126	
69	66	132	132
75	72	144	144

Thicknesses shown in table 1 can be manufactured optimized using two Kerto lamellas of the same thickness. Other thicknesses up to 144 mm are possible on request.

Multiple glued Kerto products with thickness more than 144 mm thick are easiest to manufacture up to width 600 mm and yet more effective up to width 400 mm. Required thickness or length rarely become limiting factor, it is possible to produce very thick and long cross-sections.

VISUAL QUALITY OF MULTIPLE GLUED KERTO

Multiple glued products are usually produced calibrated sanded Kerto lamellas. In calibrating sanding it is allowed to sand through the surface veneers revealing the dark glue line. Thus



Figure 1. By multiple gluing it is possible to produce even very heavy-duty beams and columns.

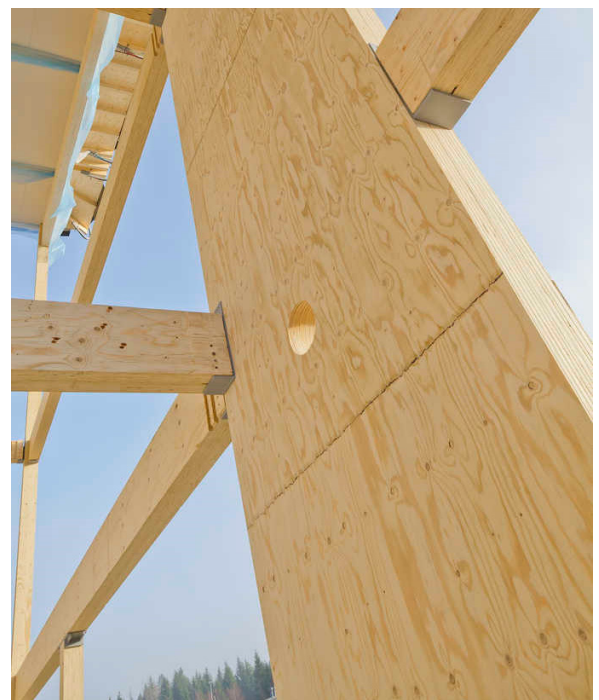


Figure 2. Multiple glued Kerto-Q bracing column in a multi-storey building.

standard multiple glued products are not recommended to visible structures. For visible structures it is possible to glue multiple glued products with optical sanding on surfaces. In optical sanding it is not allowed to sand through surface veneers and thus the appearance of this multiple glued product will be the same than with usual optically sanded Kerto products. With optically sanded surfaces it is possible to produce multiple glued Kerto up to size 144 x 1800 x 18 000 mm.

APPLICATIONS FOR MULTIPLE GLUED PRODUCTS

The most typical end uses for multiple glued Kerto products are different kind of heavy-duty beam and column structures. Large multiple glued Kerto-Q panels can be used eg. as bracing structures in multi-storey construction.

Smaller < 100 mm thick multiple glued structures are used also in industrial applications, for example in support structures of special lorries in transportation industry.

By machining or by using very thick yet narrow multiple glued dimensions, visual and interesting surfaces can be created for example to window frames, furniture and other visual applications.



Figure 3. Multiple glued and curved Kerto members in roof structures of a sports hall.

CHARACTERISTIC PROPERTIES

In table 1 are given the characteristic values of multiple glued Kerto-S and Kerto-Q according to ETA-13/0504.

Property	Symbol	Unit	Kerto-S	Kerto-S	Kerto-Q	Kerto-Q
			$h = 75 - 90 \text{ mm}$	$h > 90 \text{ mm}$	$h = 75 - 90 \text{ mm}$	$h > 90 \text{ mm}$
Bending strength, edgewise	$f_{m,0,edge,k}$	N/mm ²	44,0	44,0	32,0	32,0
Bending strength, flatwise	$f_{m,0,flat,k}$	N/mm ²	50,0	$(90/h)^{0,185} \cdot 50$	36,0	$(90/h)^{0,185} \cdot 36$
Tension strength, parallel to grain	$f_{t,0,k}$	N/mm ²	35,0	$(3000/L)^{0,06} \cdot 35$	26,0	$(3000/L)^{0,06} \cdot 26,0$
Compression strength, parallel to grain	$f_{c,0,k}$	N/mm ²	35,0	35,0	26,0	26,0
Compression strength flatwise, perpendicular to the grain	$f_{c,90,flat,k}$	N/mm ²	1,8	1,8	2,2	2,2
Shear strength, edgewise	$f_{v,0,edge,k}$	N/mm ²	4,1	4,1	4,5	4,5
Shear strength, flatwise	$f_{v,0,flat,k}$	N/mm ²	2,3	$(90/h)^{0,185} \cdot 2,3$	1,3	$(90/h)^{0,185} \cdot 1,3$
Modulus of elasticity, in grain direction (mean)	$E_{0,mean}$	N/mm ²	13 800	13 800	10 500	10 500
Modulus of elasticity, in grain direction (5% characteristic)	$E_{0,k}$	N/mm ²	11 600	11 600	8 800	8 800
Shear modulus, flatwise (mean)	$G_{0,flat,mean}$	N/mm ²	600	600	120	120
Density (5% characteristic)	ρ_k	kg/m ³	480	480	480	480

