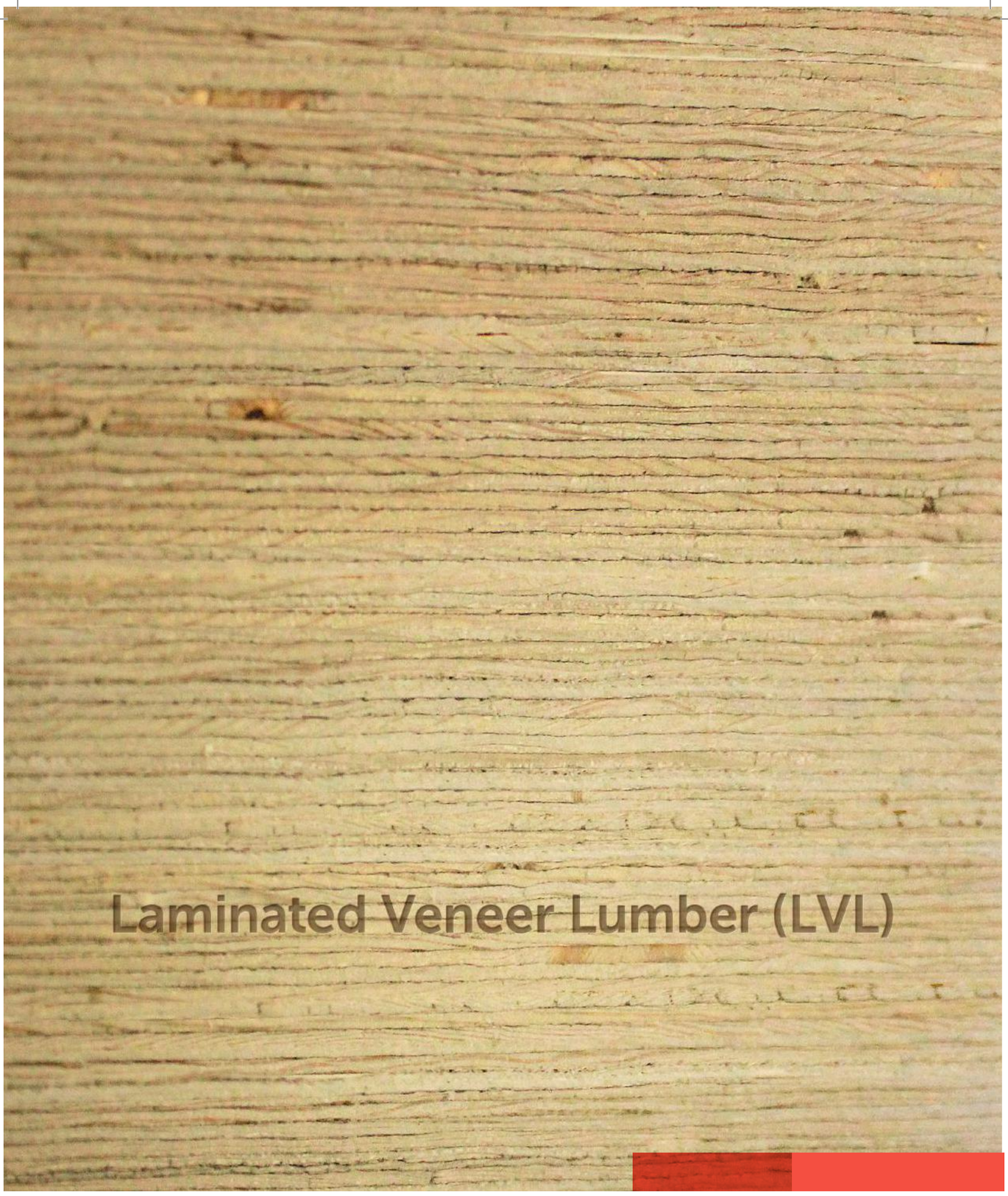


Laminated Veneer Lumber (LVL)

ultralam™ LVL

ultralam™ LVL

Ultralam™ is an engineered wood product with physical and mechanical properties surpassing solid timber and glulam, produced in the form of boards and billets of several types of veneer orientation and grade with a wide range of sizes. Ultralam™ is certified according to European, Russian, Australian and US quality standards.

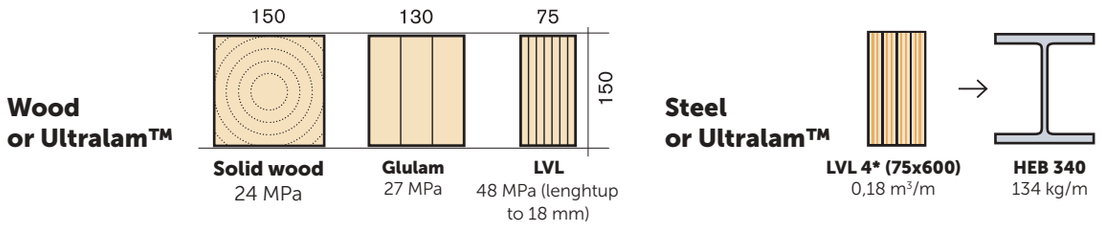
ULTRALAM	Description	Application
RS / E15	All veneers are located parallel to grain, G1–G2 grades (primary G1)	Load-bearing structures
R / E14	All veneers are located parallel to grain, G1–G2 grades (primary G2)	Load-bearing structures
X	There are some crossplies, G2–G3 grades structures	Load bearing and filler
I / E13, E12	Both parallel and crossply veneers are possible, G3–G4 grades are possible, G3–G4 grades	Filler structures and parts for doors and furniture manufacturing

Unique Ultralam™ properties afford to list it among the most prospective materials used for construction

One of the main LVL advantages is its strength characteristics achieved through manufacturing technique. Laminated structure makes LVL strong and durable.

Veneer graded against density is used for LVL production. Best veneer grades are put into the face layers; lower grades – in the middle. Such pattern provides for the stable mechanical properties of LVL. Heavy pressing used for veneers gluing results in densified structure of wood fibers; phenol-formaldehyde resin assures heavy-duty glue line. LVL has homogenous structure with constant physical-mechanical properties.

LVL properties do not change over its lifetime.

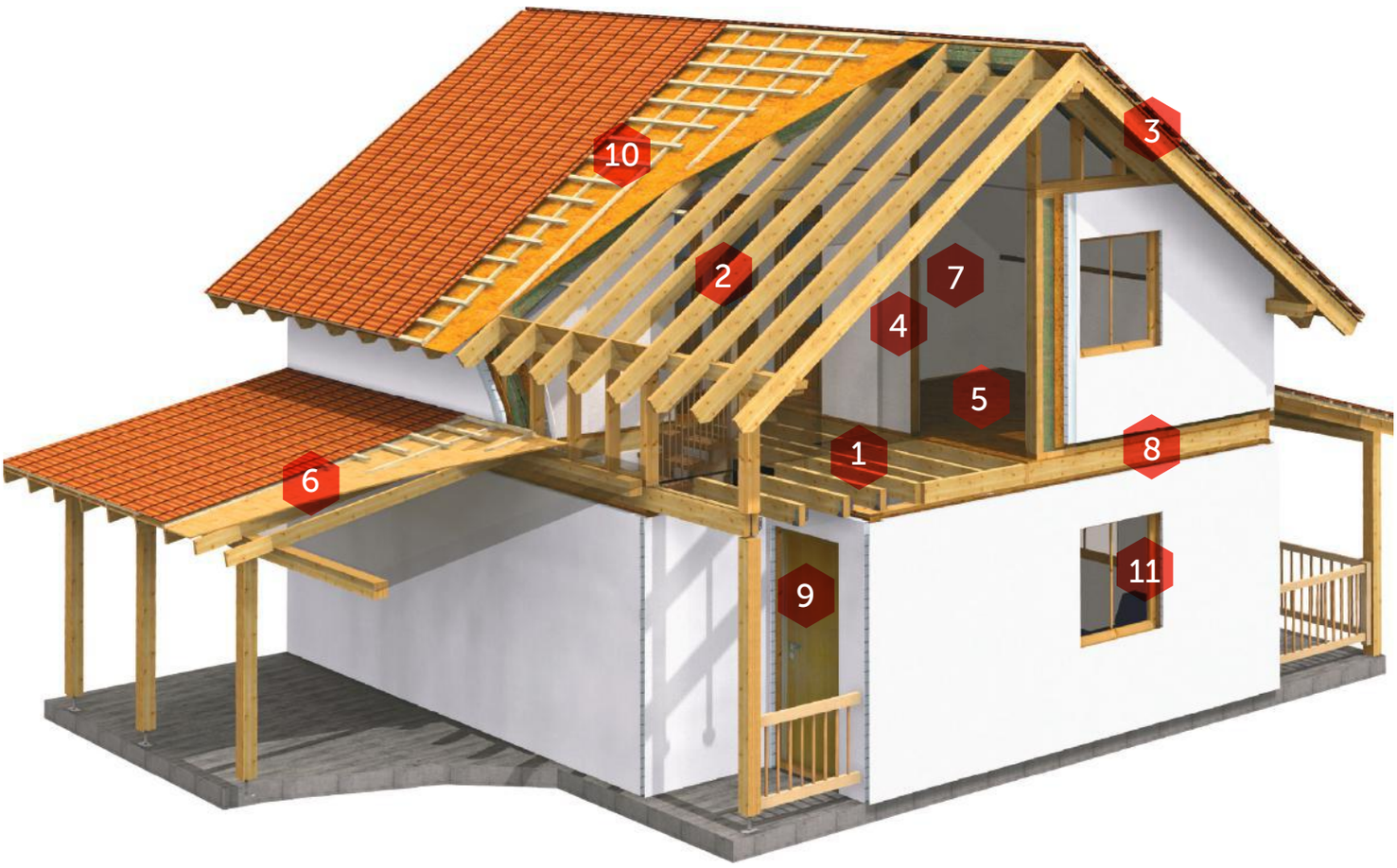


LVL maintains dimensional stability regardless of seasonal factors, environmental variations and climate conditions. This material is not subject to deformations caused by temperature and humidity variations; it doesn't crack and has low values of natural shrinkage. LVL moisture absorption is almost equal to zero, i.e. dead load of LVL beam will remain unchanged under humid environment. Dimensional stability assures high accuracy of adjacent elements.

LVL boasts better fire resistance compared to ordinary beams. This is achieved through multiple layers of veneer and less porosity of material. Phenol-formaldehyde resin is neutral to oxidation and doesn't support ignition. High density and absence of cracks prevent from fire propagation and thermal effects inside the material. LVL test results demonstrate the ability of the material to maintain its properties within 30-60 minutes at 300°C.

As opposed to metal and reinforced concrete, LVL has better resistance to corrosive environment. LVL application provides for more space and long-span structures, minimizing the number of beams and trusses. Solid wood is not suitable for such task since its beams are subject to deflection and vibration.

LVL beams characterized by high-strength and unlimited length allow to save on material, fasteners, delivery and installation costs.



	Application	Type LVL	Possible sections
1	Ceilings	Ultralam R	51x200, 51x260, 51x300, 45x200, 45x260, 45x300,75x200, 75x260, 75x300
2	Rafters	Ultralam R	51x200, 51x260, 51x300, 45x200, 45x260, 45x300, 75x200,75x260, 75x300, 75x360, 51x360, 51x150, 75x150
3	Ridge beams	Ultralam R	100x300, 100x400, 90x300, 90x400, 75x300, 75x400
4	Partition walls	Ultralam I	39x66, 45x50, 50x50, 63x30, 75x75, 90x90, 39x100,45x100, 50x100, 63x100, 75x100, 90x100
5	Boarding joists	Ultralam I, X	50x45
6	Shelters, porches, pavilions	Ultralam R, I	51x200, 51x260, 51x300, 45x200, 45x260, 45x300,75x200, 75x260, 75x300
7	Grating for plasterboard	Ultralam I	39x66, 45x50, 50x50, 63x30, 75x75, 90x90
8	Bearing structures	Ultralam R	51x200, 51x260, 51x300, 45x200, 45x260, 45x300, 75x200, 75x260, 75x300
9	Doors and windows supporting frames	Ultralam I	Doors (inside) 27 to 30 mm, 33, 3627x60, 80, 100, 120
10	Roofing and facade lathing	Ultralam I	51x50, 45x45, 39x60
11	Windows and door framing	Ultralam R	51x200, 51x260, 51x300, 45x200, 45x260, 45x300, 75x200, 75x260, 75x300, 51x100, 45x100, 75x100

ultralam™ LVL

LVL Ultralam™ is well known in different parts of the world. We're supplying LVL Ultralam™ for a number of different applications to more than 20 countries

Agricultural buildings

LVL Is ideal material for agricultural buildings because of its strength, rigidity in aggressive environment, ecological benefits:

1 2 3 Riding schools, stalls in France
4 5 Goat farm, Ryazan, Russia
6 Cow farm, Kemerovo, Russia

Warehouses

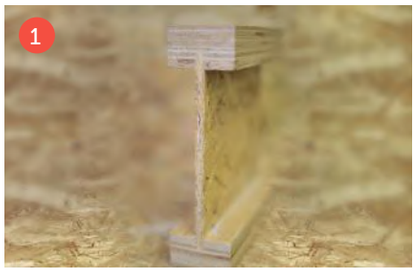
We can supply cut in size LVL Ultralam details according to the drawings of the customer

1 2 Salt warehouse, Germany
3 Agricultural Warehouse, France
4 5 6 LVL roof structure in Finlalnd

Industrial application

LVL Ultralam is widely used in different industrial applications. Here are some examples

1 I-joist application
2 Doors
3 Formwork in Australia



Public facilities

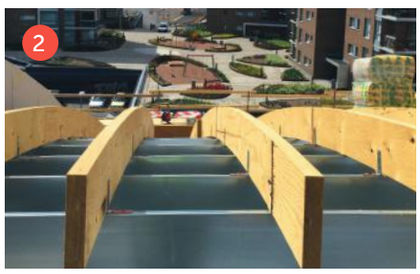
LVL Ultralam is ideal material for big span structures of sport centers, swimming pools, schools etc.

1 Modular school, Finland
2 Sports hall, Vladimir city, Russia
3 Swimming pool, Russia

Renovation

LVL is the best light weight material for renovation projects. There is no need in heavy machinery to install LVL structures

1 2 Renovation of Wärtsilä machinery factory built 1934, now renovated to appartment and office building, Turku, Finland
3 Mansarde. St.Petersburg, Russia



Wooden frame houses

1 Sphere House, Russia
2 Wooden House, Krasnoyarsk, Russia
3 Wooden Frame houses, Finland

4 5 Wooden Frame houses, Australia
6 Wooden Frame Houses Germany

ultralam™ LVL

BEAM PROCESSING

Production

LVL production plant, located in Torzhok city, Tver region, is equipped with state of the art machinery supplied by leading wood-processing equipment manufacturers from Germany, Canada, USA and Japan, annual design capacity of **150000 m³** could be ramped up to **250000 m³**.

Production is waste free, the waste is used in the premium class fuel pellets, annual capacity of the pellet line is 60000 tons.

Painting, planing and profiling line (Germany), up to 4000 m³/month

The equipment allows painting, planing, profiling and making preservation treatment for beams up to **400 mm wide, 400 mm thick and 13500 mm long**, max production capacity of the line — **4000 m³/month**

Cold pressing line by Minda (Germany), up to 3000 m³/month

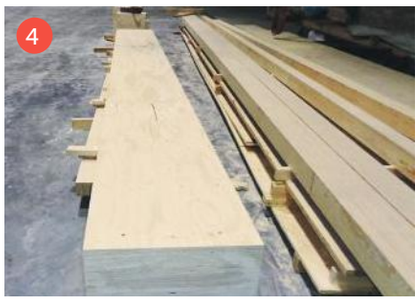
The equipment allows producing beams

100-600 mm wide
150-1350 mm thick
2500-18000 mm long

House-building factory

by MLT Ltd with equipment supplied by Weinmann, Germany, software by Sema, is intended for the production of house kits as per standard technologies of LVL based frame and panel house building.The production line capacity technologies of LVL based frame and panel house building. The production line capacity is **250 kit houses per year**

1 LVL production plant
2 Planing and profiling of LVL beams
3 Prefabricated houses line
4 5 6 Cold press line



TECH SPECS FOR EUROPE

Essential characteristics	Units	Ultralam™				
		RS	R	X		I
				19 mm ≤ t ≤21 mm	24 mm ≤ t ≤75 mm	
Bending strength:						
Edgewise	N/mm²	55,0	48,0	30,0	34,0	30,0
Size effect parameter	N/mm²	0,15	0,15	0,15	0,15	0,15
Flatwise	N/mm²	52,0	50,0	34,0	38,0	35,0
Perp. to grain, flatwise				9,0	12,0	
Tension strength:						
Parallel to grain	N/mm²	42,0	36,0	18,0	24,0	NPD
Perp. to grain, edgewise	N/mm²	0,9	0,9	5,0	5,0	NPD
Perp. to grain, flatwise	N/mm²	NPD	NPD	NPD	NPD	NPD
Compression strength:						
Parallel to grain	N/mm²	56,0	40,0	26,0	34,0	38,0
Perp. to grain, edgewise	N/mm²	8,6	7,5	9,0	9,0	7,5
Perp. to grain, flatwise	N/mm²	3,8	3,8	4,2	4,2	3,8
Shear strength:						
Edgewise*	N/mm²	5,2	4,6	4,6	4,6	3,4
Flatwise	N/mm²	3,2	3,2	2,7	2,7	3,2
Modulus of elasticity:						
Parallel to grain (mean)	N/mm²	15600	14000	10000	10600	11200
Parallel to grain (5%-fractile)	N/mm²	14000	12000	9000	900	10000
Perp. to grain, edgewise (mean)	N/mm²	NPD	NPD	NPD	NPD	NPD
Perp. to grain, flatwise (mean)	N/mm²	NPD	NPD	2300	3000	NPD
Shear modulus						
Edgewise* (mean)	N/mm²	500	500	550	550	NPD
Flatwise (mean)	N/mm²	500	500	550	550	NPD
Density (5%-fractile)	kg/m³	550	480	480	480	430

TECH SPECS FOR AUSTRALIA

	Model No/ID			
	Ultralam E 12	Ultralam E 13	Ultralam E 14	Ultralam E 15
Intended End Use	General Purpose	Scaffold Plank	General Purpose	General Purpose
Preservative Treatment	H2 S	H2 S	H2 S	H2 S
Bond type	A	A	A	A
Formaldehyde Emission Class	Eo	Eo	Eo	Eo
Flat E [MPa]	12000	13000	14000	15300
Flat f'b [MPa]	36,0	36,0	50,0	52,0
Flat f's [MPa]	2.2	2.2	2.20	5
Flat f'p [MPa]	5	5	6	4.5
Edge E [MPa]	12000	NA	14000	15300
Edge f'b [MPa]	46	NA	50	59
Edge f's [MPa]	4.5	NA	4.5	5
Edge f'p [MPa]	10	NA	12	12.5
Axial f't [MPa]	20	NA	25	30
Axial f'c [MPa]	30	NA	42	45
Joint Strength Nails	JD4	NA	JD4	JD3
Joint Strength Bolts	JD4	NA	JD4	JD3
Joint Strength Self-Drilling Screws	JD4	NA	JD4	JD3
Joint Strength Nail Plates	NA	NA	NA	NA
Comments	Characteristic properties quoted in lieu of Fgrade	Characteristic properties quoted in lieu of Fgrade	Characteristic properties quoted in lieu of Fgrade	Characteristic properties quoted in lieu of Fgrade
Date Endorsed	23 Apr 2015	8 Jan 2016	23 Apr 2015	21 Jul 2015

Certified Product Australian Standard™

The product is certified by:

HELLO WORLD!

We already supply Ultralam to our customers in Germany, France, Great Britain, Belgium, Denmark, Finland, Sweden, Norway, Latvia, Lithuania, Switzerland, the Netherlands, Poland, USA, Japan, Taiwan, Turkey, Australia, UAE, Saudi Arabia, Estonia, Malaysia, Bahrain, Egypt, South Africa etc.

We would be happy to supply Ultralam to you.

Modern Lumber Technology Ltd. (MLT Ltd.)
Head office
14-A, Bolshaya Morskaya Str.,
191186, Saint-Petersburg, Russia
Phone +7 812 312 4898
Ph / Fax +7 812 571 6164
E-mail sales@mltlvl.com

www.ultralam.com