



TOPPLANK

LAMINATED VENEER LUMBER

Scaffold plank from Russian
renewable wood sources

 Taleon Terra product

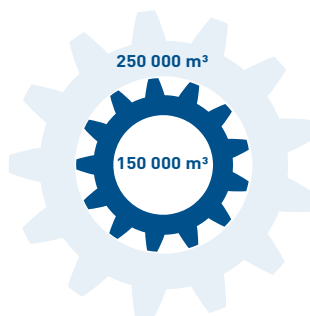
 SIA SCAFFOLD & ACCESS
INDUSTRY ASSOCIATION



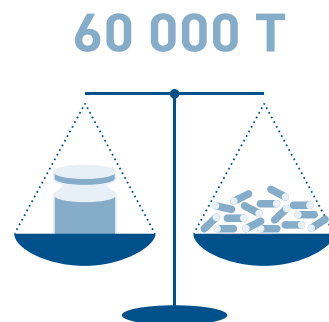
MLT LTD. PLANT IN THE TOWN OF TORZHOK



MLT Ltd. plant designed for production of Ultralam LVL is the largest production of this kind in Europe commissioned in the year 2009.



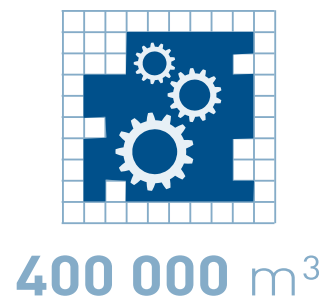
Annual design capacity of the plant is 150 000 cubic meters of LVL and could be boosted up to 250 000 cubic meters.



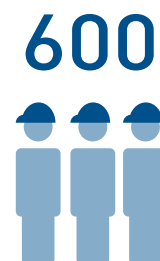
Annual capacity of wood pellet line is 60 000 tons.



Territory of MLT plant equals to 24 hectares.



Area of main production premises is 400 000 square meters.



At present 600 employees are working for MLT.

EQUIPMENT SUPPLIERS

The plant boasts unique 60 meters press designed by Dieffenbacher for continuous LVL production. This means unlimited length of LVL beams that are cut depending on the demands of our customers and transport conditions.



Production utilizes advanced technology of continuous pressing with microwave pre-heating which enhances resin propagation into the wood fibers and creates new, uniform high-strength material.

- Evergreen Engineering, USA – engineering services
- Dieffenbacher, Germany – continuous press used to glue several plies of veneer.
- COE, USA – veneer peeling line.
- CTC, USA – lay-up and billet processing lines.
- SGS, Austria - equipment installation.



UNIQUE 60 METERS PRESS ↑

PRODUCTION

Modern high-tech wood processing techniques are utilized in production of Ultralam laminated veneer lumber. Such approach makes possible to double the advantages attributable to the solid timber and minimize its disadvantages.

MLT has its own log yard which area allows to store up to 40 000 cubic meters of logs. Raw materials (pine and spruce) delivered to the mill are sorted against species, quality and size at semi-automatic Hekotek line (Estonia).

From the log yard the logs are fed to debarking line. Debarking, conditioning and sawing of raw materials are performed at the line supplied by Vitech Engineering, Inc. (Canada).

Conditioning of coniferous raw materials is performed in through-type conditioning ponds for the time period from 24 to 36 hours, at 50-80°C. Primary function of conditioning process is heating up of wood to make it softer and increase its workability prior to peeling.

The logs are then unloaded onto the chain conveyor that takes them to the slasher, a pendulum disc saw with



LOG YARD ↑

three cutters. The slasher trims the logs at the ends and cuts them into 2.65 m peeling blocks that proceed to the peeling line.

Blocks peeling and clipping of 3.2 mm thick veneers is performed at high speed line supplied by COE Manufacturing Company, USA. Production capacity of the line is up to 18 blocks per minute.

COE line is equipped with a special set of supporting rolls providing the peeling down to 90 mm cores. Such cores and defect veneer are diverted on special conveyor and then chipped and used at pellet production.

When delivered to the peeling line, the block is scanned by laser beams. Scan data is communicated to the spindles which assure optimum block positioning and highest

veneer recovery.

Veneer ribbon is delivered to the clipper along the acceleration conveyor. Computerized video control system available at the peeling line detects both veneer defects in the ribbon and pattern of ribbon clipping to the required sizes. Scanner system reveals veneer defects during clipping process what precludes their presence in veneer sheets loaded into the dryer.

Control system reads the moisture content value and calculates average or maximum moisture content for each sheet. The same value is used to determine the average moisture content when veneer is graded against moisture content.

Veneer is dried in a 6-level roller-type thermal oil dryer



HIGH SPEED PEELING LINE ↑

Germany by Grenzebach BSH. The air is circulated inside the dryer until it reaches certain humidity. Air temperature inside the dryer sections may be up to 192°C.

From the dryer outfeed veneers are taken to the sorting conveyor. Veneer tester «Metriguard» determines the density of dry veneer sending ultrasonic signals and measuring the signal propagation time in the veneer. Denser the veneer, the quicker ultrasonic wave travels through the sheet. Veneer is separated by 4 grades based on the density measurement results. A-class veneers are used for structural LVL manufacturing.

Full-size veneers proceed to the scarfing line, random and defected veneers – to



THERMAL OIL DRYER ↑

defect clipping and composing line. Hashimoto Denki Co (Japan) composing line is designed to compose full-size veneer sheets out of random veneers or veneer pieces. All defects are clipped out prior to composing.

Composed sheets with longitudinal orientation of grain are fed to the scarfing line and further to the lay-up system.

Lay-up of the billets is made at Corvallis Tool Company (CTC) automatic line. For the moment this is the quickest line of this kind with 2 levels. Line speed is 54 sheet counts per minute and if necessary could be increased up to 81 sheet count per minute.



VENEER GRADING LINE ↑

Different patterns are used to make type I and II boards. Thickness range of the billets varies from 21 to 100 mm. Lay-up of Type I means that all veneer sheets have parallel orientation of grains. In type II lay-up veneers with parallel orientation of grains are combined with cross-band veneers in predetermined sequence.

Phenol-formaldehyde glue with high water resistance and low emission class is used for LVL production. The glue is applied through the curtain coater located crosswise the lay-up line. The glue is pumped to the curtain coater from both sides. Veneer sheets with glue spread proceed to the lay-up section.

Lay-up section consists of 2 levels, each one equipped with internal and external groups of forks. While the inner forks load veneer, outer

forks place the sheet onto the conveyor. Then the package is moved to the shuttle which takes it to the press infeed section.

Veneer fan is continuously formed on the lay-up line and conveyed to the microwave pre-heater incorporated into the hot press. Pre-heating and hot pressing is done in Dieffenbacher press (Germany). Continuous mat of LVL travels along the belt

conveyor and passes through metal detector which prevents ingress of metal parts into the microwave unit.

In the continuous press LVL billet is conveyed with constant speed through several zones with different temperature and pressure settings where it is densified to the required thickness. Pressing temperature is 185°C.

When the billets exit continuous press, they pass through the blow detector and thickness meter; then the billet sides are hogged to final dimension and it is cut by diagonal saw to the length required. Billet stacks are taken to the storage where they are kept for at least 24 hours. After the hold time the billets are cut at rip saw.

Sound boards are conveyed to the packaging line where they are first marked with plant logo and other special information. The stack of LVL boards is accumulated. Auto-



AUTOMATIC LAY UP LINE ↑

matically LVL stacks are cut by length, edges are squared, the boards are wrapped into special PVC film and banded with metal strap. Packed bundle is placed into the billet warehouse.

Finished products are tested at MLT QC lab. Testing equipment available at the lab allows to measure basic physical and mechanical properties of the product, as well as its density.



PRESS ↑



PRODUCTS ARE TESTED ←



WAREHOUSE ←

TOPPLANK IS A STRONG AND LIGHT LVL SCAFFOLD PLANK

The structural uniformity of LVL combined with the strict quality control of all processes of manufacture ensures TOPplank is safe and for purpose as scaffold planking.



The superior technical characteristics of TOPplank make it ideal for use in place of other LVL scaffold planks and ordinary timber planks. Use of TOPplank is also advantageous:

- In the chemical industries and marine applications for corrosive environments
- Where the electrical insulation properties of TOPplank are another safety advantage
- Where sparks arising from metal on metal contact may present a hazard for safety
- Where the scaffolding layout precludes use of modular system



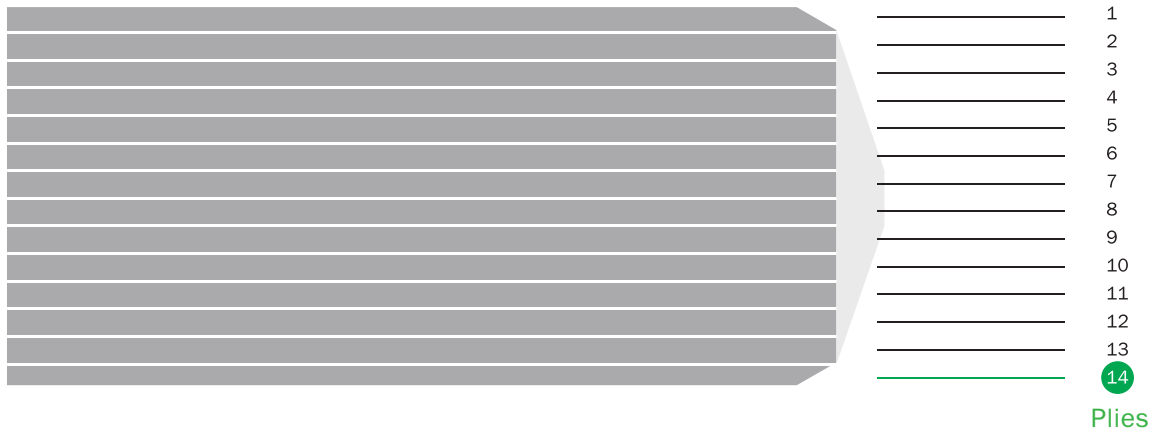
TOPPLANK INCLUDES:

- Individually proof tested
- 100% renewable Russian spruce and pine
- Strong and long lasting
- Customer specific edge branding
- Enhanced durability and safety
- Meets all industry standards
- Stamped as “scaffold plank”
- Excellent structural rigidity
- Predictable strength
- Lightest in weight
- Perfect for petrochemical and gas industries
- Anti-corrosive and chemical properties

TOPPLANK SCAFFOLD SPAN TABLES

LOAD RATING	MAXIMUM SPAN
75 psf (HD)	10'
1 Person	10'
2 Person	10'
3 Person	7'

NUMBER OF PLYS AT 39 MM THICK SCAFFOLD PLANK



TOPplank is homogeneous with superior strength properties and is proof-tested to ensure compliance to the OSHA and ANSI A 10.8-2001 Standards and is stamped accordingly. Its outstanding technical

characteristics is a result of combination of best quality raw materials, high-tech equipment and brand new production technologies. To ensure production of best quality LVL we use 1 additional veneer ply for

every thickness beginning with 38mm (14 veneer plies instead of 13 for the thickness 38mm and 15 veneer plies instead of 14 for the thickness 42mm with every single veneer thickness of 3mm).

PERSON-LOADING REQUIREMENTS APPLICATION*

LOAD LOCATIONS	SUPPORT SPAN (FT)	MAXIMUM APPLIED LOAD (LBS)	DEFLECTION AT LOAD (IN)	ALLOWABLE DEFLECTION (IN.)
Center	10	250	1,5	2,0
18" each side of center	10	500	1,9	2,0
18" each side of center	8	500	1,0	1,6
18" each side of center	7	500	0,8	1,4
Center and 18" each side	7	750	1,3	1,4
18" each side of center	6	500	0,3	1,2
Center and 18" each side	6	750	0,8	1,2
Center and 18" each side	5	750	0,3	1,0

*Tests carried out according to OSHA/ANSI A 10.8-2001 on sample cross-section 38x225 by independent third party laboratory Element Materials Technology

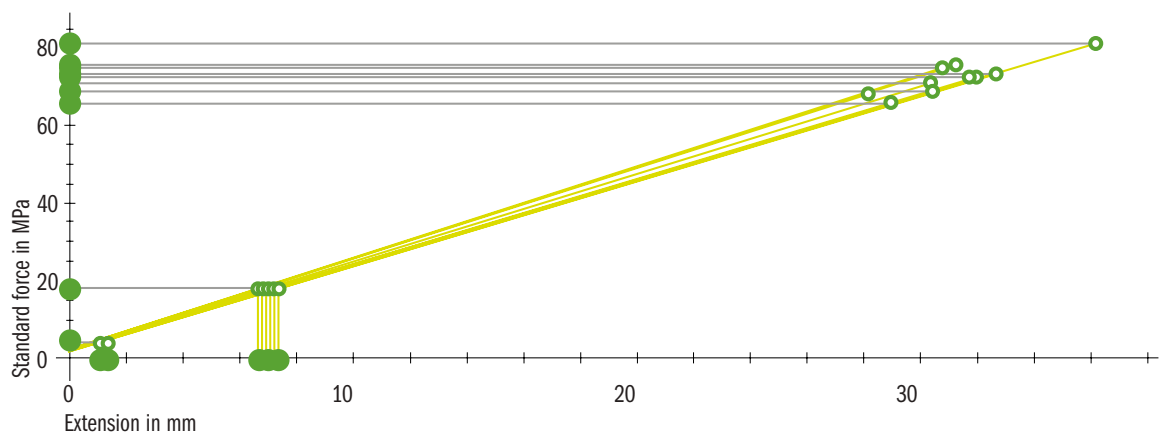
ULTIMATE DISTRIBUTED LOAD CAPACITY (UDL)

SPAN (FT)	APPLIED UNIFORM LOAD (LBS.)	RATING	SURFACE AREA (SQ. FT.)	DEFLECTION (IN)	ALLOWABLE DEFLECTION (IN.)
10	375	MD-50 psf	7,50	1,00	2,0
10	565	HD-75 psf	7,50	1,50	2,0
9	340	MD-50 psf	6,75	0,875	1,8
9	510	HD-75 psf	6,75	1,375	1,8
8	450	HD-75 psf	6,00	0,750	1,6

EXAMPLE OF EVERY DAY TESTS, WE MAKE ON TOPLANK LVL SCAFFOLD PLANKS

NR	σ -LOW N	D- σ -BOTTOM MM	σ -HIGH N	D- σ -TOP MM	WIDTH b MM	HEIGHT H MM	F MAX MPA	EM, G N/MM2	MOISTURE, %	DENSITY, KG/M3
1	393,74	1,39	1574,98	7,04	65,68	39,48	67,60	17644	8,5	569
2	392,74	1,32	1570,96	6,87	65,38	39,52	74,35	17926	8,8	555
3	395,09	1,25	1580,37	6,86	65,44	39,62	75,38	17725	8,8	571
4	398,44	1,44	1593,77	7,37	65,63	39,73	65,22	16714	8,7	544
5	385,32	1,36	1541,30	7,12	65,8	39,02	70,54	17509	8,2	566
6	387,07	1,34	1548,27	7,09	65,76	39,12	80,59	17471	8,3	567
7	388,22	1,37	1552,88	7,26	65,62	39,22	72,11	17032	8,9	544
8	388,93	1,37	1555,74	7,30	65,44	39,31	73,20	16889	8,7	575
9	388,95	1,36	1555,82	7,30	65,51	39,29	68,43	16856	9,0	561
10	385,95	1,34	1543,81	7,28	65,37	39,18	72,22	16916	9,2	567

SERIES GRAPH:



STATISTICS:

SUB-SERIES #1 N = 10	MOISTURE, %	DENSITY, KG/M3	F MAX MPA	EM, G N /MM2
x	8,7	562	71,96	17268
s	0,3	11	4,38	432,3
v	3,53	1,93	6,08	2,50

TECHNICAL CHARACTERISTICS ACCORDING TO CE-CERTIFICATE

	R	RS	X	I
BENDING STRENGTH: EDGEWISE SIZE EFFECT PARAMETER FLATWISE	48 N/mm ² 0,15 50 N/mm ²	55 N/mm ² 0,15 52 N/mm ²	34 N/mm ² 0,15 38 N/mm ²	30 N/mm ² 0,15 35 N/mm ²
BENDING STRENGTH: EDGEWISE SIZE EFFECT PARAMETER FLATWISE	36 N/mm ² 0.9 N/mm ² NPD	42 N/mm ² 0.9 N/mm ² NPD	24 N/mm ² 5 N/mm ²	NPD NPD NPD
COMPRESSION STRENGTH: PARALLEL TO GRAIN PERP. TO GRAIN, EDGEWISE PERP. TO GRAIN, FLATWISE	40 N/mm ² 7,5 N/mm ² 3,8 N/mm ²	56 N/mm ² 8,6 N/mm ² 3,8 N/mm ²	34 N/mm ² 8 N/mm ² 4,2 N/mm ²	38 N/mm ² 7,5 N/mm ² 3,8 N/mm ²
SHEAR STRENGTH: EDGEWISE FLATWISE	4,6 N/mm ² 3,2 N/mm ²	5,2 N/mm ² 3,2 N/mm ²	4,6 N/mm ² 2,7N/ mm ²	NPD NPD
MODULUS OF ELASTICITY: PARALLEL TO GRAIN (MEAN) PARALLEL TO GRAIN (5%-FRACTILE) PERP. TO GRAIN, EDGEWISE (MEAN) PERP. TO GRAIN, FLATWISE (MEAN)	14000 N/mm ² 12000 N/mm ² NPD NPD	15600 N/mm ² 14000 N/mm ² NPD NPD	10600 N/mm ² 9000 N/mm ² NPD 3000 N/mm ²	11200 N/mm ² 10000 N/mm ² NPD NPD
SHEAR MODULUS: EDGEWISE (MEAN) FLATWISE (MEAN) DENSITY REACTION TO FIRE CLASS RELEASE OF FORMA	500 N/mm ² 500 N/mm ² 480 kg/ m ³ D-s1, d0 E1 4	500 N/mm ² 500 N/mm ² 550 kg/ m ³ D-s1, d0 E1 4	550 N/mm ² 550 N/mm ² 480 kg/ m ³ D-s1, d0 E1 4	NPD NPD 430 kg/m ³ D-s1, d0 E1 4

BUILD SAFELY

We at MLT Ltd. are committed to work safely and want to remind you to do the same. We encourage you to follow the recommendations of OSHA (www.osha.gov) regarding:

- Personal protective equipment for hands, feet, head and eyes
- Fall protection
- Product performance specification

STORAGE AND HANDLING RECOMMENDATIONS:

When TOPplank delivered on site it's suitable for use as scaffold plank with

highest technical characteristics. Care in the use and storage of TOPplank

insures its longer service life.



DURING USAGE OF TOPPLANK PLEASE FOLLOW RECOMMENDATIONS BELOW:



- Keep scaffold planks dry. The strength and performance of scaffold plank is reduced by increased moisture content.



- Store planks in dry, well-ventilated area.



- Protect planks from extreme weather conditions.



- Do not drop TOPplank from big heights



- Do not use TOPplank over spans greater than those recommended by scaffold designer



- Do not allow vehicles to drive over TOPplank



- Do not push or hit bundles of scaffold planks with the fork ends



- Do not expose scaffold planks to oxidizing chemicals





TOPPLANK

 Taleon Terra product

MODERN LUMBER TECHNOLOGY LTD.
www.ultralam.ru