



COLLATED WOODEN NAILS



Your motivation is to meet modern demands with natural materials?
Our innovation provides you with the sustainable support you need.

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THE FIRST COLLATED NAIL MADE OF WOOD

LIGNOLOC® is the first ever pneumatically driven wooden nail for future-oriented use in industrial production and ecological timber construction (among many other applications).

The revolutionary LIGNOLOC® wooden nails are made from indigenous beech wood and boast a maximum tensile strength similar to that of aluminium nails. Their mechanical properties allow the nails to be driven into solid structural timber* and wooden materials with the FASCO® LIGNOLOC® pneumatic nailer, without pre-drilling, to form an inseparable bond with the timber.

LIGNOLOC® wooden nails offer an advantage over fasteners made of aluminium or steel in that they form no thermal bridges and leave no traces of corrosion in the wood. If the workpiece subsequently needs to be shaped or machined, then this is possible without any cutting tool wear.

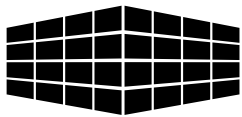
AWARDS

The function, design and idea behind the LIGNOLOC® wooden nail system have won many prizes! We are delighted with the following awards:

- 3rd place, LIGNA Innovations Symposium 2017, Hanover
- Bronze, Batimat Innovation Award 2017, Paris
- 2nd place, Innovation Award Biocomposite of the Year 2017, Cologne
- Trophée Eurobois 2018, Lyon
- 1st place in Innovation category, materialPREIS 2018, Stuttgart
- Green Product Award 2018, Berlin
- IWF Challengers Award 2018, Atlanta USA
- PTIA Award 2018, Atlanta USA
- AIT Innovation Award Architecture + Construction 2019, Munich



* for wood weighing 350 to 500 kg/m3 and in compliance with edge distances specified in Eurocode 5





INDIGENOUS BEECH WOOD

THE RAW MATERIAL FOR LIGNOLOC® WOODEN NAILS

Beech is the wood best suited to manufacturing LIGNOLOC® wooden nails, because its straight growth gives it the most homogeneous cell structure.

The nail is hardened by compressing the cell structure and permeating it with resin. This also gives the wood tremendous durability – outdoors as well.

Since beechwood is an indigenous and renewable raw material, this is particularly good for our environmental balance and rounds off our ecological approach to timber construction.

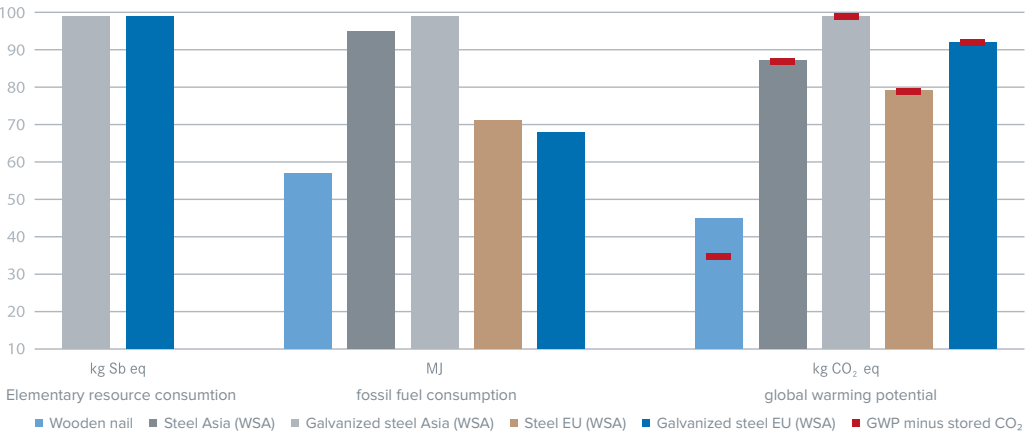


LIGNOLOC® offers great potential for sustainable construction and living.

EXEMPLARY ECOLOGY

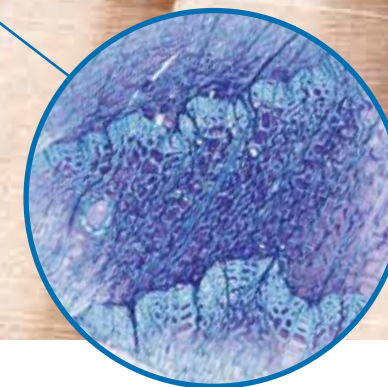
75 % LESS GREENHOUSE GASES THAN METAL NAILS

From production through recycling, LIGNOLOC® wooden nails distinguish themselves with their environmentally friendly properties. European beech is a renewable raw material with short transport distances. According to a study from the Nova Institute, production of a LIGNOLOC® wooden nail generates only 25 % of the greenhouse gases generated by producing a technically comparable steel nail.



Elementary resource consumption is virtually 0 % for LIGNOLOC®. The fossil fuel consumption is only 58 % of that for a steel nail. The comparison shows that the global warming potential of producing a LIGNOLOC® nail is only one third of that for a steel nail made with wire from Asia. If the CO₂ bound in the nail is also taken into account, the global warming potential is actually only 25 % in comparison. Source: Nova Institute - LIGNOLOC® LCA (Life Cycle Analysis), May 2018

HIGH HOLDING POWER THANKS TO **LIGNIN WELDING**



Microscopic image of the bond between a LIGNOLOC® wooden nail and the surrounding base wood.

SCIENTIFICALLY CONFIRMED

LIGNOLOC® NAILS WELD WITH THE SURROUNDING BASE WOOD

The special design of the LIGNOLOC® nail tip and the large amount of heat generated by friction when the nail is driven in cause the lignin of the wooden nail to weld with the surrounding wood to form a substance-to-substance joint.

Wooden nails behave differently to nails made of metal. Apart from the mechanical differences of the materials, wooden nails have a significantly rougher surface.

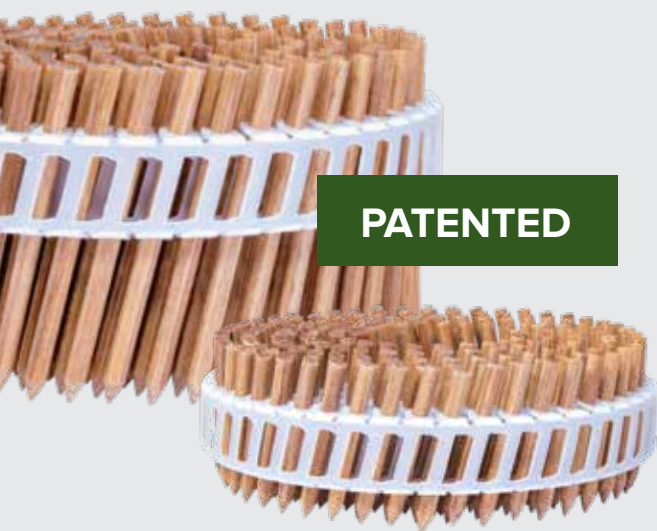
This natural surface roughness is required to facilitate the lignin welding process. The LIGNOLOC® pneumatic nailers from FASCO® supply the necessary power for this process, because, in principle, the higher the insertion velocity, the better the nail welds. The phenomenon of lignin welding was established in 1998.

The lignin welding effect of LIGNOLOC® has since been verified by BECK in collaboration with scientists at Hamburg University by means of UV-scanning of the cell structure (see illustration). The European Journal of Wood also picked up this subject in a scientific article in January 2018.



THE LIGNOLOC® F44 SYSTEM

THE FIRST COLLATED NAIL MADE OF WOOD



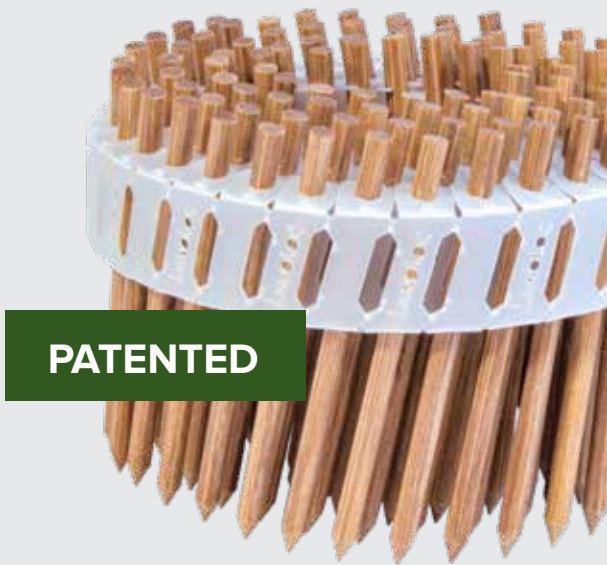
LIGNOLOC® F44 WOODEN NAILS*

Diameter:	3,7 mm 0.146"
Lengths:	38 / 50 / 55 / 60 mm 1 ½ – 2 3/8"
Material:	Compressed beech wood
Colour:	Natural
Coil capacity:	170 – 850 Nägel
Magazine:	15° coil of LIGNOLOC® in a plastic belt
Tensile strength:	~ 250 N/mm2 absolute
Extraction values:	~ 8,5 N/mm2 characteristic**
Shear values:	~ 362 N characteristic**

** acc. to VHT test report

THE LIGNOLOC® F60 SYSTEM

THE NEW DIMENSION IN COLLATED WOODEN NAILS



LIGNOLOC® F60 WOODEN NAILS*

Diameter:	4,7 - 5,3 mm 0.185" - 0.209"
Lengths:	50 / 65 / 75 / 90 mm 2 / 2 ½ / 3 / 3 ½"
Material:	Compressed beech wood
Colour:	Natural
Coil capacity:	100 Nägel
Magazine:	15° coil of LIGNOLOC® in a plastic belt
Tensile strength:	~ 250 N/mm2 absolute
Extraction values:	~ 7 N/mm2 characteristic**
Shear values:	~ 527 - 663 N characteristic**

** acc. to VHT test report

LIGNOLOC® F44 PNEUMATIC NAILER*

FROM FASCO®



Height:	322 mm 12.67"
Width:	130 mm 5.12"
Length:	275 mm 10.82"
Weight:	2,40 kg 5.29 lbs
Pressure:	min. 7 bar 100 psi
Actuation system:	Single shot & contact actuation
Loading:	Coil

LIGNOLOC® F60 PNEUMATIC NAILER*

FROM FASCO®



Height:	387 mm 12.67"
Width:	142 mm 5.60"
Length:	369 mm 14.53"
Weight:	3,95 kg 8.70 lbs
Pressure:	min. 6 bar 87 psi
Actuation system:	Single shot & contact actuation
Loading:	Coil



LIGNOLOC® WOODEN NAILS: KEY BENEFITS

QUICK PROCESSING – NO PRE-DRILLING*

LIGNOLOC® wooden nails are fired in pneumatically. This completely eliminates the need for pre-drilling* and gluing, such as that for wooden dowels, thereby saving time and money.



ECOLOGICALLY MORE SUSTAINABLE THAN METAL NAILS

From production through recycling, LIGNOLOC® wooden nails distinguish themselves with their environmentally friendly properties. Furthermore, the material uniformity has thermal benefits – the wooden nails form no thermal bridges.



CORROSION-RESISTANT AND DIMENSIONALLY STABLE

LIGNOLOC® wooden nails cannot rust and their special composition makes them resistant to swelling and fungal infestation. They are suitable for use in utilisation categories 1+2 as per Eurocode 5 / DIN EN 1995-1-1.



POST-PROCESSING WITHOUT ANY TOOL WEAR

LIGNOLOC® wooden nails conserve cutting tools and saw blades. Post-processing of prefabricated wooden elements or machining is simplified because of no metallic foreign bodies.



* for wood weighing 350 to 500 kg/m³ and in compliance with edge distances specified in Eurocode 5.



USE IN ECOLOGICAL WOOD PROCESSING METAL-FREE AND SUSTAINABLE

The LIGNOLOC® system from BECK opens up countless application options for you – whether it be indoors, in covered outdoor areas or in areas susceptible to corrosion:

- Laminated wood construction and solid wood wall systems
- Solid wood applications
- Decorative interior timber cladding
- Wooden furniture
- Sauna construction
- Floors: OSB and real wood floorboards
- Reclaimed wood processing
- Boat building
- Wooden coffins
- Fixing boards
- and many more

RECLAIMED WOOD PROCESSING

LIGNOLOC® wooden nails made from old wood blend harmoniously into the wood structure and do not need to be concealed after installation. This time benefit makes wood recycling even more attractive.



INTERIOR TIMBER CLADDING

For aesthetic reasons, interior paneling made of wood is mostly fastened invisibly. With LIGNOLOC® wooden nails, these panels can now be mounted visibly as well.



WOODEN FURNITURE

Wood is alive – LIGNOLOC® lives along with it. LIGNOLOC® wooden nails are ideal for use in natural furniture production, lending its appearance a finishing touch, both indoors and in covered outdoor areas.





USE IN INDUSTRIAL PRODUCTION TIME-SAVING MATERIAL UNIFORMITY

The ecological and functional benefits of LIGNOLOC® wooden nails can also be utilised industrially. LIGNOLOC® can be processed both with LIGNOLOC® hand-held pneumatic nailers and with LIGNOLOC® HEADs from FASCO® in automated systems.

FASCO® LIGNOLOC® HEAD*

Weight: 14 kg | 30.865 lbs
 Operating pressure: min. 7 - 9 bar | 102 - 130 psi
 Firing speed:** max. 4 shots per second
 at max. 14 m/min feed rate
 Trigger system: Pneumatic remote release
 Magazine type: 15° coil in a plastic belt
 of 850 LIGNOLOC® wooden nails
 Integrated belt separator



Currently connection to the following systems is possible:



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* Subject to change without notice ** Using a 50mm LIGNOLOC® coil

CROSS-LAMINATED TIMBER (CLT) PRODUCTION GLUED AND VACUUM-PRESSED

LIGNOLOC® wooden nails for fixing the CLT visible layer are not only aesthetically more appealing than aluminium nails, they also cause no damage to the vacuum membrane of the press.



SOLID WOOD WALL SYSTEMS

LIGNOLOC® is an alternative to wooden dowels in solid wood wall construction, offering a metal-free, quick layer connection mechanism. In contrast to steel fasteners, the walls can be post-processed without cutting tool wear.



PALLET PRODUCTION

Pallets nailed together with LIGNOLOC® protect the transported goods and have no protruding nail heads to cause scratches. At the end of their service life, the pallets can easily be chopped up and recycled.



We would be pleased to help you with possible applications. Contact us at www.beck-lignoloc.com/kontakt or +43 7724 2111-0.

BECK is a family company founded in 1904. Since more than 85 years, BECK is one of the world's leading manufacturers of innovative fastening solutions.

Whether it be developments in response to customer requirements or to keep ahead of the market – innovation is the driving force behind BECK. The company's in-house R&D team searches tirelessly for new solutions to provide BECK customers with greater user comfort and cost-effectiveness.

BECK is now a globally active, family-owned company with sites in Austria, Germany, Italy, Poland and the USA.

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