

How environment may benefit from a wood-based composite nails compared to a steel nails

In 2017, the BECK Fastener Group, Austria, has introduced the world's first collated wooden nail under the name LignoLoc®, which can substitute classic steel nails in a multitude of applications. This novelty allows for solutions and applications entirely made of wood, which provides substantial advantages for example in light weight, optics and recycling.

The nova-Institute has investigated how the new nail compares ecologically to standard galvanized steel nails in a life cycle assessment (LCA) study.

In 2013 about 400 million wooden pallets were produced in Europe with a statistical lifetime of 5 – 7 years. Actually, more than 4 billion wooden pallets are estimated to be in circulation in Europe. A high percentage of wooden pallets are produced according to EPAL standard, using 78 steel nails with a weight of 0.525 kg per pallet. To make calculation simple, this weight is assumed to be an average for all pallets. Summing up the weights of all pallet-nails results in 2.1 million tons of galvanized steel. Replacing galvanized steel nails by LignoLoc which are made of beech wood veneer and resin would reduce this weight to 1/6 or 350000 t. In other words 1.75 million tons would not been transported over European streets.

In static applications, nails are mostly used for construction and repairing of houses. In this application LignoLoc already found its market in replacing steel nails. Environmental impact in categories like cumulative energy demand (CED) or global warming potential (GWP) from production until end of life of wooden nails in comparison to steel nails will be shown in the presentation.

a concise quote (one sentence) about your presentation

Wooden nail LignoLoc reduces weight to 16.7%, CED to 74% and GWP to 20% in comparison to a steel nail of same size.