

The wooden sleeper as a CO₂ store and its contribution to climate protection

A position paper

Forest and wood are effective carbon stores

As trees grow, they bind CO₂ from the atmosphere and store it in the wood. In a sustainably managed forest, every harvested tree creates space for new trees, which further improves the carbon storage function of the forest.

After harvesting, the CO₂ remains stored in the wood and the wood product made from it, for as long as it is used. And the longer such a product is removed from the atmosphere in this way, the better for the climate! Suitable preventive protective measures also ensure a significant improvement in the natural durability of wood products, with the result that the period of use and thus the CO₂ storage period is further extended.

Track and turnout sleepers made of wood as climate protectors

Track and turnout sleepers made of wood are excellent CO₂ stores: 1 cubic meter of wood stores around 0.9 tons of CO₂. Converted to a single beech threshold with a volume of 0.108 cubic meters and an average bulk density in the dry state of 634 kilograms / cubic meter, this corresponds to a CO₂ storage capacity of 0.126 tons!

The network length of Deutsche Bahn is currently (2018 figures) exactly 33,299 kilometers, corresponding to a track length of 60,803 kilometers. Wooden sleepers are installed on 6,624 kilometers and 51 kilometers of bridge sections, a total of approximately 11.1 million pieces. This means that wood has a share of 11 percent without taking the switch thresholds into account. The total CO₂ storage capacity of wooden sleepers is around 1.4 million tons of CO₂! In relation to the total of around 118 million tons of CO₂ stored in all wood products in Germany (reference: „Holz ist der Rohstoff der Nachhaltigkeit“ in www.forstwirtschaft-in-deutschland.de), this represents 1.2 percent! CO₂-storage value could even increase up to 12,7 million tons, if Deutsche Bahn rail network theoretically would completely switch back to wooden sleepers.

This storage effect lasts when the wooden sleepers are properly impregnated with an approved impregnation solution for a remarkable useful life of several decades.

During this time, wooden sleepers not only reduce CO₂ emissions, but also prevent the installation of sleepers made of alternative materials that would have been produced using a lot of fossil fuels and with the corresponding CO₂ release.

And last but not least: At the end of their life cycle, wooden sleepers release the amount of CO₂ stored in them, which, however, is in turn stored by the renewable trees. In this way, wooden sleepers become part of a self-contained, neutral CO₂ cycle.

What does this mean for the railway network operator?

The increased use of track and turnout sleepers made of wood ...

- ... is a significant contribution to climate protection!
- ... helps them to further improve their ecological profile