

Why is the service life of sleepers so important?



Sleepers are safety-relevant components on railways. Material stability in all relevant weather conditions is therefore crucial, even throughout their entire service life. With a shorter service life, more frequent inspections must be carried out to check their condition.

Sleeper maintenance and replacement increases the overall asset service life cost due to additional interventions requiring procurement of materials and the cost of site work. In addition, the railway operator often also incurs loss

of income and additional costs due to line closures, diversions and compensation for delays/train cancellations.

There are proven service lives for the most common sleeper materials such as wood, concrete and steel. Proof of service life is still awaited for alternative wood impregnation (instead of creosote) and many new plastic sleepers. [Deutsche Bahn](#) (DB) currently calculates the following average service lives for sleepers depending on the material category (see table). However, as practice shows, there are large differences depending on the quality, material composition and chosen technical solutions. For example, the durability of concrete is influenced by many factors and in some cases, sleepers had to be replaced after only 10 years. Depending on the type of wood, untreated wooden sleepers had to be replaced after only 5 years, partly because the necessary pull-out force from the drill holes is no longer available. Depending on the location of use, e.g. on a bridge or in very damp parts of the track, the service life can therefore vary greatly.

Lifespan of sleepers (DB 2021)	
Wood (impregnated)	15 years
Concrete	40 years
Steel	35 years
Synthetic	approx. > 30 years



FFU replaces wood – DB bridge in Minden (DE)

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FFU[®] (Fibre Reinforced Foamed Urethane) sleepers, developed in the 1970s by SEKISUI together with the Japanese railways, have been in continuous use since 1980 all over the world without any needing to be

replaced due to age. Material tests by railway institutes confirm a service life of at least 50 years, but many experts estimate it to be considerably longer.

Since FFU[®] does not require any impregnation to be rot-proof and UV-stable, it also actively contributes to environmental and drinking water protection and thus sets the high standard worldwide for safe and sustainable sleepers. Due to the high global demand, FFU[®] is now produced not only in Japan, but since 2023 also in Europe, in a new, [modern factory](#) in Roermond (NL).

- **Rot-proof, UV-resistant, extremely durable** (lifespan >50 years), **recyclable**
- Adhesion in the ballast, no embrittlement, material + dimensional stability for **safe railway operation**
- **Drinking water safe certified**, no impregnation (compared to standard wooden sleepers)
- Linear elastic for **gentle railway operation** (even at extreme temperatures <-65°C)
- **Axle load > 45 tonnes**, used on high-speed tracks > 300 km/h
- In continuous operation **since 1980, type-approved, class A sleepers** according ISO 12856-1 (2014), B
- Minimal maintenance and **low life cycle costs**
- **Fire protection:** flame retardant, self-extinguishing, non-toxic, **low smoke level**