

SUSTAINABLE, LONG-TERM COST REDUCTION: THE VOSSLOH

Engineered Polymer Pad

Our elastic solution for
concrete sleepers





Reinforcing superstructure, reducing costs: The Vossloh Engineered Polymer Pad

Concrete sleepers last the distance

There are many advantages to concrete sleepers, including safety, stability, a high level of efficiency, excellent weather and corrosion resistance and a long service life. But concrete is not very elastic. Although rail fastening systems absorb some of the forces that occur, it's the weakest link in the superstructure – the ballast – that has to deal with the rest. Engineered Polymer Pads (EPP) protect the ballast and keep maintenance costs down.

Our polymers ensure elasticity and a long service life

The elastic polymer developed by Vossloh is applied to the underside of the concrete sleepers, specifically improving their damping properties. That reduces maintenance and repair costs for the entire track bed and extends the service life of all the track components. This EPP also has a positive effect in terms of comfort and noise emissions.

Key benefits

- › Longer tamping intervals and reduced maintenance costs
- › Less wear to ballast and tracks
- › Improved comfort and reduced noise emissions
- › Reduced bending moment in concrete sleepers

EPP from Vossloh forms an elastic layer between the concrete sleeper and superstructure. It absorbs the transmitted forces and increases the contact surface of the sleeper on the ballast, ensuring a more even load distribution. The EPP thus enhances the efficacy of the ballast superstructure and uses its full potential.

A further advantage is that the EPP firmly anchors the sleepers and tracks in the ballast layer and improves the stability of the track bed. The elastic material optimises the resistance of the sleeper to lateral displacement and reduces the risk of track buckling. EPP thus makes an important contribution to track safety.

Wide range of applications

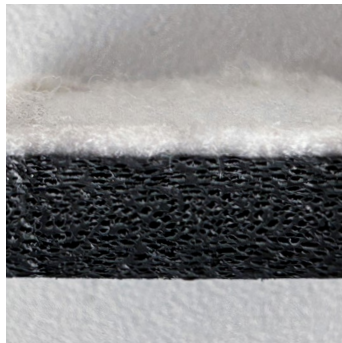
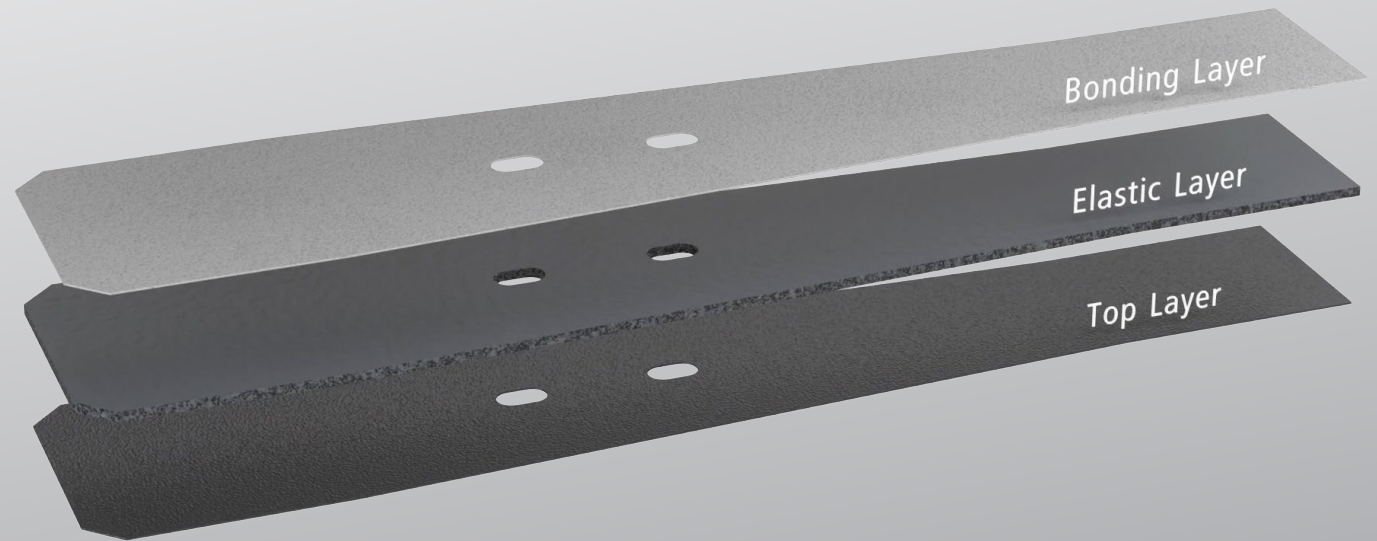
- › Variable configurations for all segments, from trams to heavy haul
- › Ideal for artificial structures such as tunnels and bridges, and also for turnouts and transitional areas
- › Perfect for areas with firm ground and minimal ballast depths
- › Improved track stability, better safety on the track
- › Also suitable for other sleeper types
- › Reduces vibration



**Optimised load distribution
between ballast and sleeper**

Works perfectly at all levels

Three separate layers ensure that Vossloh's EPP will fit perfectly, wherever you need to use it.



Secure connection

The firm grip offered by the bonding layer ensures that the EPP will stay permanently attached to the concrete sleeper. Despite being highly stable for years of use, it can be detached easily and completely at the recycling stage.

Perfect damping

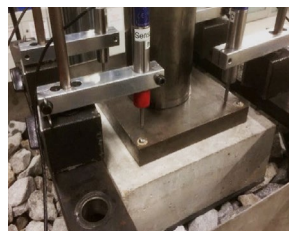
The central elastic layer, made of a thermoplastic compound, was specially developed by Vossloh for the EPP. A flexible mix of materials and adjusting the degree of foaming enables the bedding module to adapt perfectly to the desired requirements and intended purpose.

Resistant contact surface

A tough top layer fills the gap between the central elastic layer and the ballast. It is designed to accommodate and absorb the ballast stones. It also enhances protection against penetration by the sharp edges of the ballast.



Bedding module individually adjusted for the intended purpose



EPP tested for material fatigue in the ballast layer with eight million load cycles



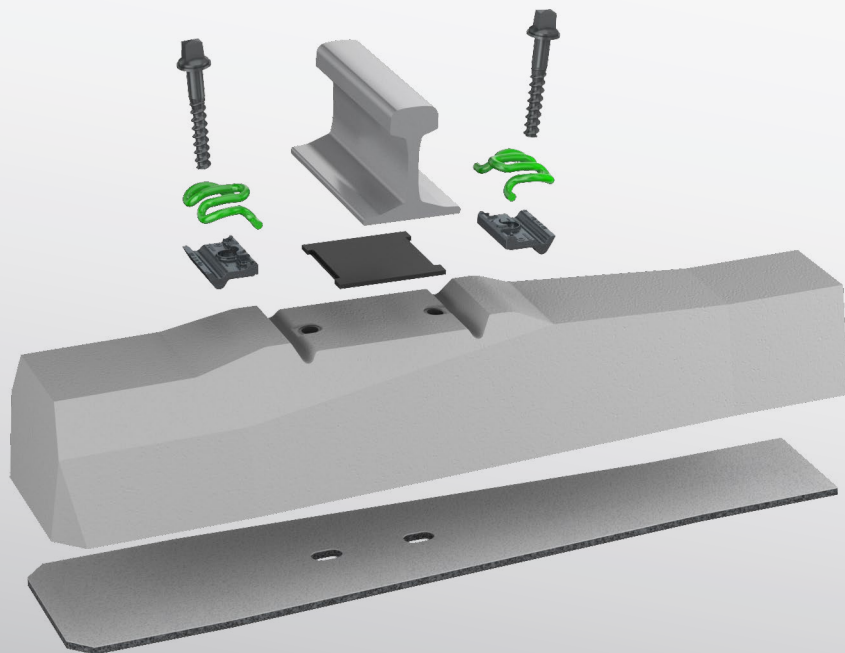
Testing tear resistance of the bonding layer ensures long-lasting adhesion to the concrete



High shear resistance of the EPP tested by the Technical University of Munich



The load applied during the stackability test corresponds to the weight of 15 concrete sleepers with EPP

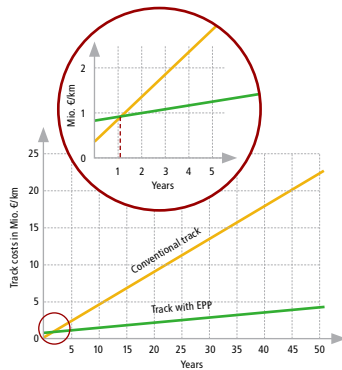


Expertise from a single source

At Vossloh we can look back on many years of experience in design, configuration and use of EPP. We produce the innovative polymers that we use for various applications in railroad superstructures in our own plants. Our products have proved themselves in countless tests and are perfectly configured for the tough conditions of rail infrastructure.

An investment that swiftly pays for itself

Cleverly calculated: The extra cost of the concrete sleepers with EPP is quickly recouped thanks to the reduced cost of maintenance. Savings can run into the millions over the entire lifecycle of the track.



Fitting EPP to concrete sleepers massively reduces the economically significant lifecycle costs of the superstructure. As the diagram shows, maintenance and operating costs far exceed the cost of constructing the tracks. Investing a little more at the outset therefore pays off very quickly.

The savings can be clearly measured just a few months after the track goes into operation, and keep on growing with the passage of time. That means even replacing existing concrete sleepers with new concrete sleepers fitted with EPP can be worthwhile overall.

Cushioning costs throughout the entire lifecycle

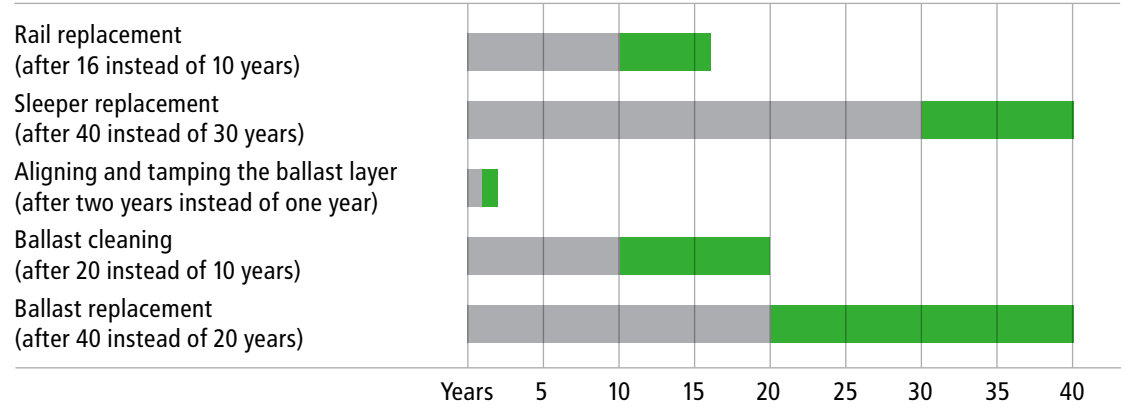
- Reduces maintenance costs by extending tamping intervals
- Less wear and tear to ballast, sleepers, tracks and wheels
- Reduces downtimes
- Low material weight keeps transport costs down



Long-term savings: with Vossloh EPP

The figures are clear: The EPP extend the service life of every individual component in the superstructure and reduce overall costs by almost a third. Even simply on economic grounds, Vossloh EPP are the right choice.

Extending service life and maintenance cycles



The result:
Using Vossloh EPP significantly reduces cumulative costs of maintenance, operation and depreciation

Recycled raw materials

The resources we use for our EPP are almost entirely materials that have been through a recycling process. That significantly reduces both energy consumption and carbon emissions.

Green energy for production

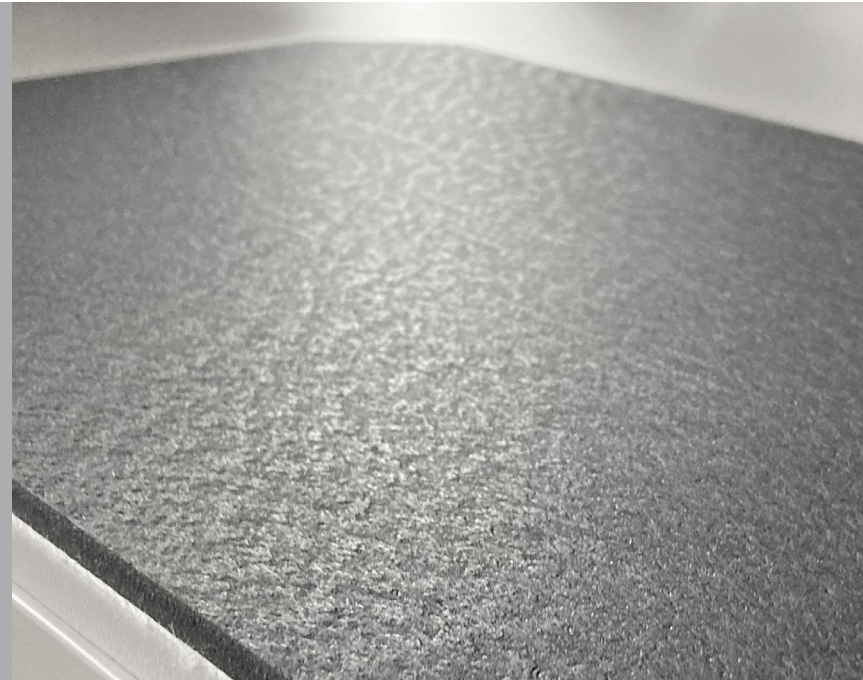
We use only energy from renewables for processing our EPP. That also saves a lot of carbon in the production process.

Fully recyclable at the end of their service life

When a concrete sleeper fitted with one of our EPP reaches the end of its service life and has to be replaced, the EPP is easy to remove. The material is then fully recycled.

Improved sustainability thanks to the circular economy

To meet all future requirements, here at Vossloh we structure production of our EPP to make it not only cost-efficient but also highly sustainable at the same time.





Vossloh Engineered Polymer Pad – technical details at a glance



You can also use our
Product Finder on our
Web site:



Vossloh Engineered Polymer Pad (EPP)

Technical properties

Thickness [mm]

Static bedding module [N/mm³]¹

Mechanical fatigue strength [after 3 and after 8 million load cycles]^{1,2}

Contact surface with ballast after 3 million load cycles [%]²

Tear resistance [N/mm²]¹

Shear resistance [N/mm²]²

Freeze-thaw test [- 15 °C bis + 60 °C]¹

Stackability [Equivalent to 15 sleepers]¹

Resistance to ageing [+ 70 °C]²

¹ Tested in accordance with EN 16730.

² Tested in accordance with customer-specific requirements.

EPP *Ballast Shield*

7 and 10

0,20 – 1,00



> 15

> 0,50

> 0,50



Note: EPP is still in the development stage. All technical properties represent the current state of knowledge and are subject to technical adjustment.

Interested in more products in the Vossloh portfolio for your rail infrastructure?

Take a look at our Product Finder, where you'll quickly
find the solution that's right for you!

Click here to directly
access the Product Finder



Vossloh Fastening Systems GmbH

Vosslohstraße 4
D-58791 Werdohl

Phone +49 (0) 23 92 / 52-0
Fax +49 (0) 23 92 / 52-448

info.corecomponents@vossloh.com
vossloh.com