Zinoco®

Coated rail for extending life in corrosive environments

Technical datasheet

RAIL

Zinoco by British Steel is a premium coated rail designed for use in aggressively corrosive rail conditions such as coastal track, wet tunnels, level crossings and salt pans.

Our award-winning Zinoco offers excellent corrosion protection due to its durability, sacrificial protection and damage tolerance.

Working in partnership to meet customer needs

British Steel works in partnership with customers to understand the needs of the rail sector and develop innovative and value-adding products to directly address those needs.

Working closely with UK customer Network Rail, we have produced and tested Zinoco in response to their requirement for a rail with a durable coating to withstand corrosive track environments. Our previous corrosion protection system Railcote® delivered a 3-30 times life extension. Results to date indicate that the performance of Zinoco will surpass that.

Sacrificial protection

Sacrificial protection is an electro-chemical reaction which occurs when the anode sacrifices itself in favour of the cathode. The resulting flow of electrons prevents a corrosive chemical reaction. With Zinoco coated rail, the zinc-rich (anode) coating oxidises in preference to the steel (cathode), therefore preventing the rail from corroding. This process protects the metal, even if the zinc layer is damaged. Additionally, Zinoco will age in outdoor conditions to form a stable barrier, further reducing corrosion.

Rigorous testing for product performance

The effectiveness of Zinoco is assured by our comprehensive laboratory testing procedures which cover stringent criteria such as impact and wear resistance, adhesion and prohesion. In independent laboratory trials, Zinoco has been proven to outperform all alternative coated rails tested to date.

Its performance so far has led to Zinoco being fully approved for use in track by Network Rail, London Underground, RATP and Irish Rail.

Super-hydrophobic finish to repel contaminants

Zinoco coated rail is the world's first with a super-hydrophobic finish. This surface treatment uses nanotechnology to keep the rail dry. It repels any contaminants, so prevents prolonged contact between the rail and any corrosive material and also creates a self-cleaning effect.

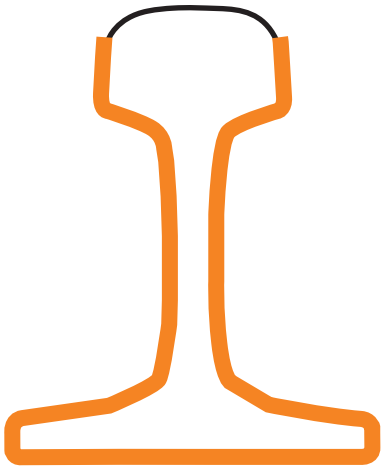
Technical support

British Steel has produced and supplied thousands of tonnes of coated rail products over the last two decades. Our technical team's deep understanding of corrosion protection and specific, associated welding requirements, coupled with research data and practical experience deliver coating solutions to meet your rail needs.

Our technical team is available to provide advice and support, helping you to optimise your rail selections. Rail products and grades can be matched precisely to track conditions, track types, environmental conditions and a host of other variables to enable every rail we deliver to provide optimum performance throughout its extended service life.

Application process

Zinoco® is treated with a thermally sprayed zinc-rich alloy which can be applied to rails of any grade in lengths of up to 216 metres. The coating is applied to the web and around the foot of each rail – the ends of each rail are usually left uncoated to facilitate installation welding.



Zinoco coated rail protects against corrosion in the areas highlighted, enabling the rail to resist pitting, gall and general loss of section due to corrosion.

We suggest the use of corrosion-resistant fastening systems to complement Zinoco in addressing track corrosion issues.

Other coating configurations may be available upon request. Please contact us for more information.

Welding

Zinoco rail is fully weldable by both flash butt and aluminothermic welding processes. The coating must be removed from the area to be welded by an abrasive disc or belt. New rails are usually supplied with uncoated ends to speed installation and are clearly identified with a Zinoco label which contains links to further product and usage information. Touch-up kits are also available to reinstate corrosion protection of the welded area at the installation site.

Cutting and drilling

Zinoco may be cut and drilled using standard practices without removal of the coating.

Performance against current competition

Coating	Sacrificial protection	Abrasion resistance	Impact resistance	Coating removal (for welding)
Zinoco®	Yes	Excellent	Good	Moderate
Railcote®	Yes	Moderate	Moderate	Easy
Aluminium metal spray	No	Very good	Good	Difficult/hazardous
Glass flake epoxy	No	Very poor	Very poor	Difficult/hazardous
Glass flake polyester	No	Poor	Poor	Difficult/hazardous

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