

Coating solutions

Bezinal® Coated Steel Wire

Bezinal®

Bezinal® 2000

Bezinal® 3000



Coating Solutions For Active Corrosion Resistance

At Bekaert, we offer a wide range of active, passive, or combined corrosion resistant coating solutions suitable for any application and environment. For active corrosion protection, we have our own range of zinc aluminum coatings called Bezinal®. This technology provides the best performance in terms of corrosion and heat resistance, durability, and processability

1. Bezinal® superior coating technology

Bezinal® is Bekaert's industry leading coating technology with unsurpassed corrosion resistance.

Bezinal® is a Zinc + Aluminum (Mischmetal) eutectic alloy that exhibits remarkable corrosion resistant properties by combining passivation corrosion characteristics present with aluminum together with the sacrificial protection offered by zinc content of the alloy.

2. Protected by Bezinal®

When it comes to active corrosion protection, Bezinal® is the ultimate choice. Our range of Bezinal® products is extensive and designed to deliver exceptional performance and durability. Depending on the application, Bekaert offers five types of Bezinal®:

- **Bezinal®** : 95%Zn + 5%Al - The standard in high corrosion resistant coating solution.
- **Bezinal® 2000**: 90%Zn + 10%Al - Superior protection in high corrosion environment
- **Bezinal® 3000**: Zn+Al+Mg - Maximum corrosion protection.
- **Bezinal® XP*** - Superior corrosion resistance for critical springs.
- **Bezinal® XC*** - Resilient corrosion resistance that withstands severe coiling procedures.

** For more information about Bezinal® XP and Bezinal® XC, coatings for critical springs, get in touch with your local Bekaert representative via our website www.bekaert.com.*



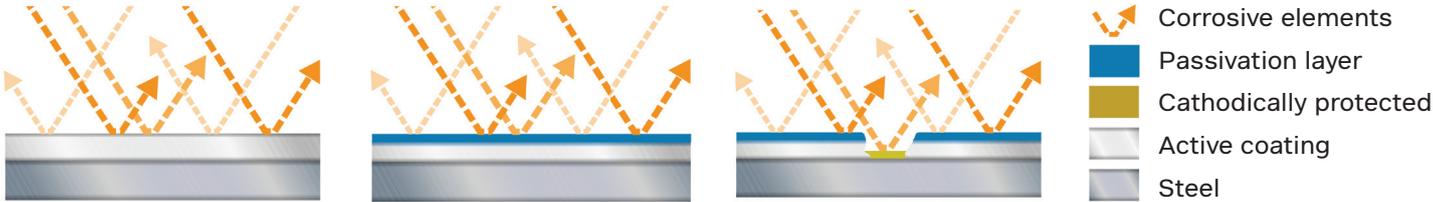
Expected Lifetime in different corrosion classes

Bekaert has been producing steel wire for several decades. By working closely with our customers, we have become familiar with the challenges and needs of these businesses. Using our field expertise, in combination with our advanced testing capabilities, we offer a range of coated wires each fine-tuned to the particular conditions your application is exposed to.

Superior corrosion resistance

Bezinal® coated wires resist corrosion 2 to 6 times longer in heavily polluting corrosion tests** than hot-dip galvanized wires and last up to 8 times longer in heavily polluted areas**. This is thanks to the formation of the dense and high quality passivation layer that is mainly formed by aluminum oxides.

** Based on salt spray tests and Kesternich tests.



Cathodic protection

Zinc-alloy coatings also offer cathodic protection of uncoated areas of the steel (e.g. cut-ends or scratches). The active coating generates an electrical current which reverses (counteracts) corrosive attack of the steel.

Whereas zinc is essential to create cathodic protection, adding magnesium to the coating, like in Bezinal® 3000, not only improves corrosion resistance it also can make red rust disappear completely. The table below compares the cathodic and self-healing performance various types of coated wires.

Zinc	Bezinal®	Bezinal® 2000	Bezinal® 3000
Cathodic performance of 4 mm wire samples after three years of outdoor exposure			
Cathodic performance of 4 mm wire samples after three years of outdoor exposure			

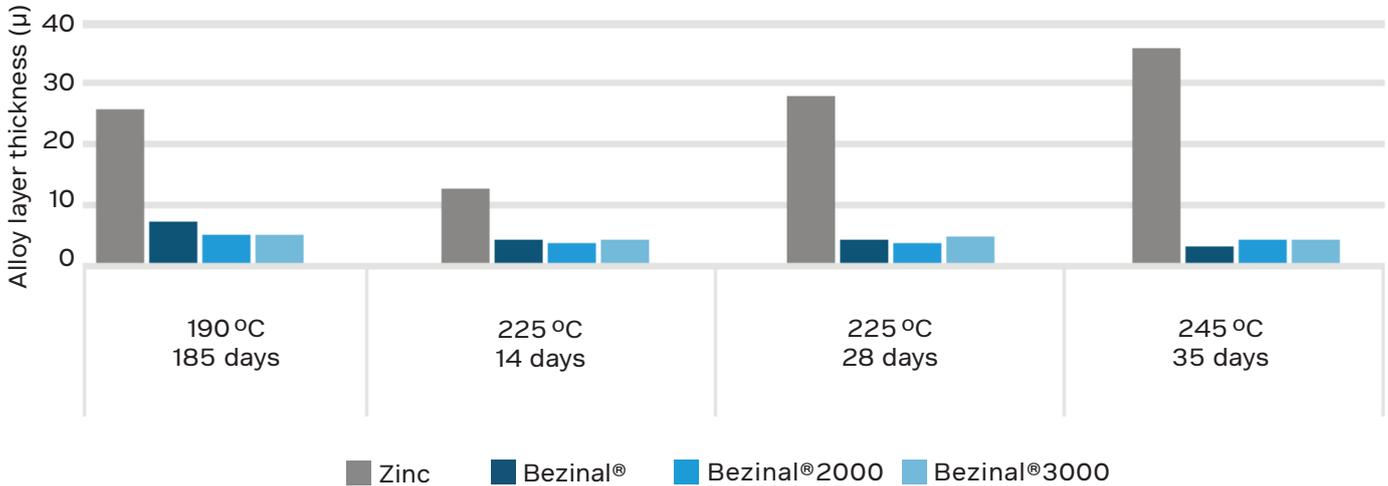
Proven Quality Tried & Tested

To ensure the good quality and performance of our products, Bekaert performs various standardized tests for product development or on the specific request of our customer. Bekaert performs corrosion tests from our own laboratories and has them confirmed by various independent research facilities across the globe. Standard tests include: Heat resistance test, Neutral salt spray test, Kesternich test.

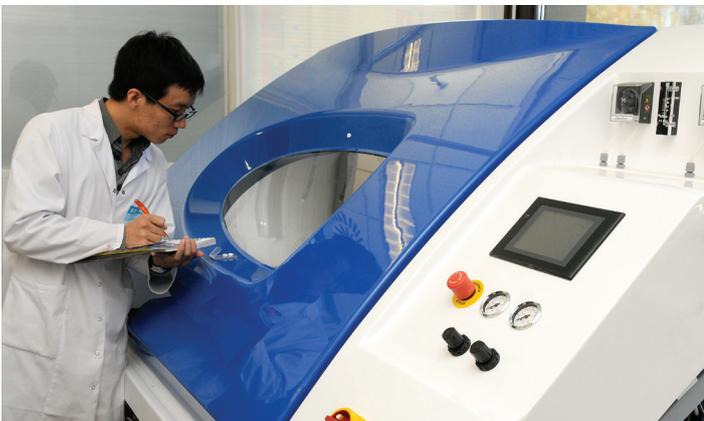
Heat Resistance

Regular hot-dip galvanized (HDG) wires tend to experience alloy layer growth when exposed to higher temperatures. This alloy layer is the interface between the metallic coating and the steel wire. It generally contains the elements of the top coating combined with iron from the wire core. However, coatings of the Bezinal® range are immune to this phenomenon due to an inhibiting action of aluminum. Unlike Zn-Al alloy coatings, regular zinc coatings are extremely hard. When this brittle alloy layer grows, the coating can lose adhesion especially when the wire is being bent. The following graph illustrates the alloy layer growth of HDG zinc at different exposure times and temperatures. Note the absence of alloy layer growth for the coatings of the Bezinal® family of coatings.

Intermetallic layer thickness after heat treatment starting from 3-6 μ initial alloy layer for different coatings



1-X wrapping of 1.85 mm wires for 185 days on 190°C



HDG Zinc

Bezinal® coated

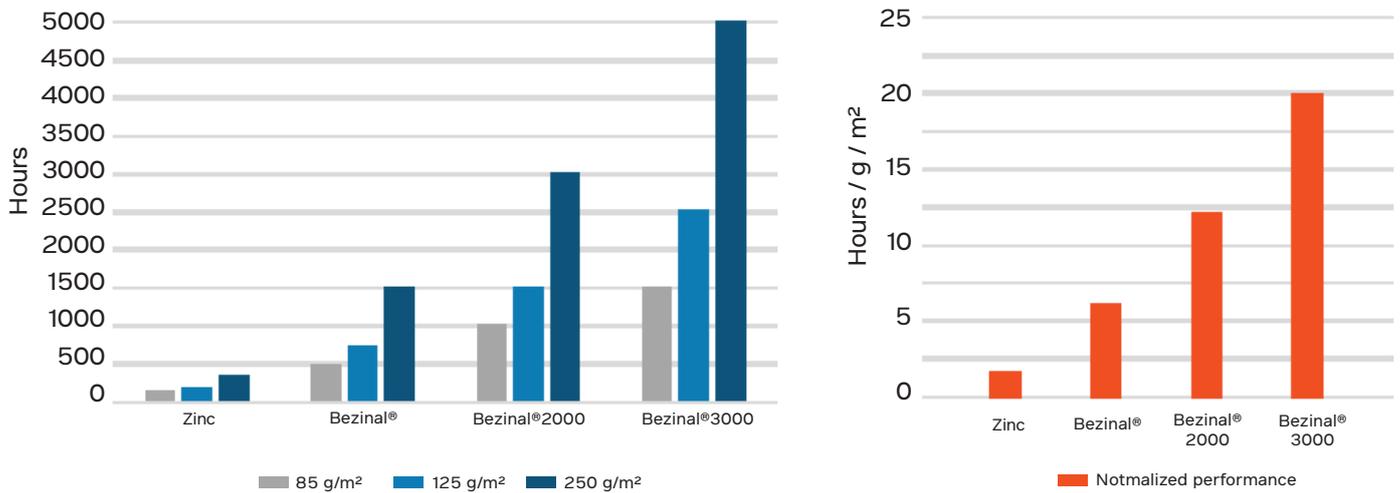
Neutral salt spray test

According to ISO 9227, ASTM B117

The salt spray method exposes various specimen, inside a cabinet, to a continuous spray of 5 % NaCl at a temperature of 35°C and relative humidity of 98%. The test measures the quality and performance consistency of metallic coatings.

When applied to the Bezinal® range, the classic Bezinal® coating outperforms zinc by approximately three times, Bezinal® 2000 roughly by six times and Bezinal® 3000 even up to ten times.

Salt Spray resistance till 5% dark brown rust for 2.5 mm coated wires



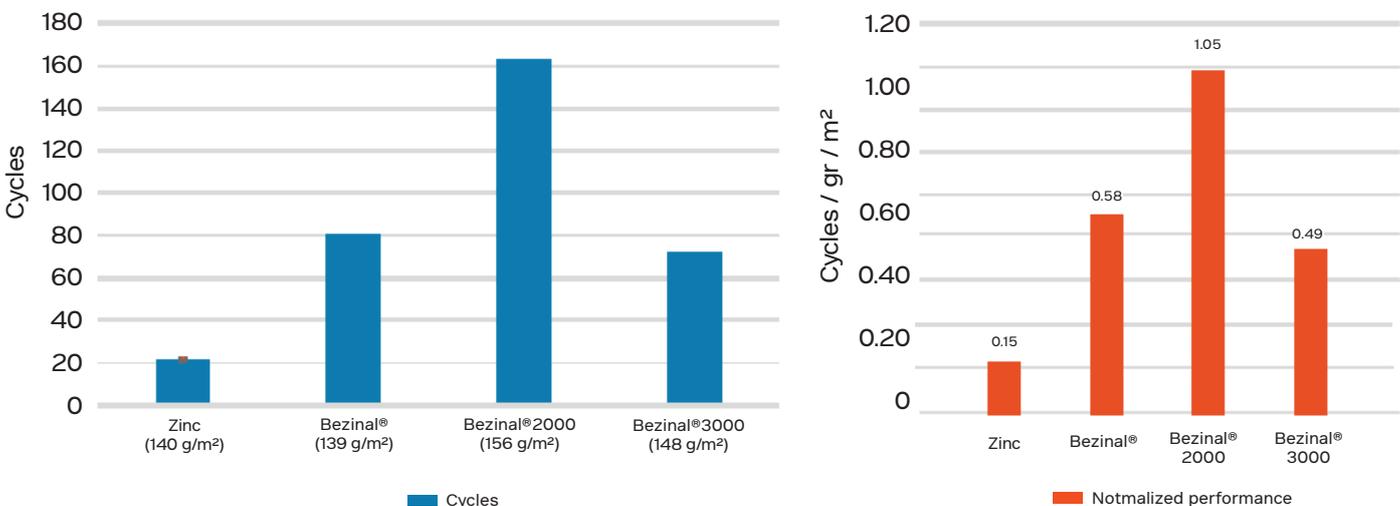
Kesternich test

According to ISO 6988:1985 and ASTM G87

During the Kesternich test, steel wire specimen experience a specific daily dose of acidic sulfur dioxide gas while inside a controlled cabinet. The tests simulate exposure to industrial pollution and volcanic activity.

The performance of the coating rises with its aluminum content. Bezinal® 2000 offers the best performance as it contains 10% aluminum, followed by Bezinal® and Bezinal® 3000 with a lower aluminum content. Pure zinc performs considerably poorer in polluted environments.

Kesternich performance till 5% dark brown rust of a series class B metallic coated redrawn wires



The example in the graph shows the normalized corrosion performance and consistency for various wire diameters and coating weights.

Wide-range of Applications

Our Bezinal® coating improves the life cycle of our products without compromising performance. Bekaert puts all coatings through our rigorous testing process – each coating undergoes stress tests that mimic long-term exposure. In corrosive conditions, Bezinal® outperforms other popular coatings. Bezinal® is an ideal choice for a wide range of applications, including Steel cores for overhead electrical conductors (ACSR/ACSS); Static wire/Overhead ground wire; Guy strand; Messenger strand; and Barbed staples.



Steel cores for overhead electrical conductors (ACSR/ACSS)



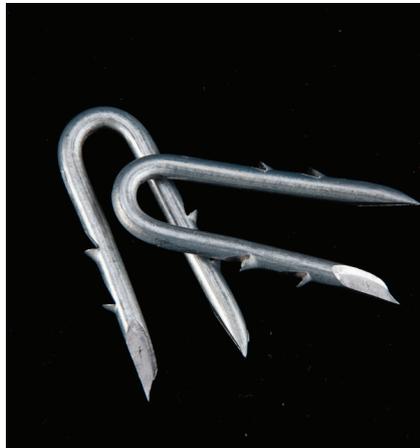
Static Wire/Overhead Ground Wire



Guy Strand



Messenger Strand



Barbed Staples



Contact us

More
Information?

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