

# Bezinal® 3000 coated wire for cables and ropes



Maximize your cable and rope performance in static and dynamic applications

## Benefits



1 Superior corrosion resistance



2 Optimal mechanical performance



3 Suitable for a wide range of applications

Static and dynamic ropes and cables are constantly being exposed to extremely harsh conditions. Ensuring a safe and reliable operation requires the right protection. Bekaert's range of coated steel wires offers a solution for any rope or cable application.

Featuring excellent breaking load, fatigue strength and corrosion protection, our wires assure an optimal performance at rope, strand and cable level. To further maximize the service-life of your application, a range of advanced zinc aluminum coatings can be applied as well as traditional zinc.

### **Bezinal® 3000 coating: superior protection against corrosion, abrasion and thermal degradation**

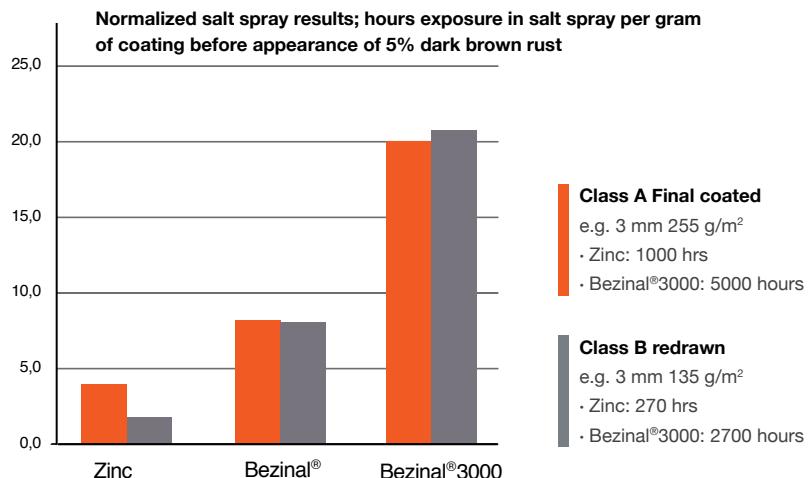
The Bezinal® coating range consists of two high-performance zinc aluminum coatings: Bezinal® and Bezinal® 3000. Compared to zinc, Bezinal® 3000 provides a more sustainable corrosion and abrasion protection. The smooth surface and excellent thermal resistance of both Bezinal® coatings allows a safe operation of ropes and cables when exposed to high temperatures.



# Proven Quality

Bekaert has been producing wire for the rope and cable industry for several decades. By working closely with our customers, we have become familiar with the challenges and needs in 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.

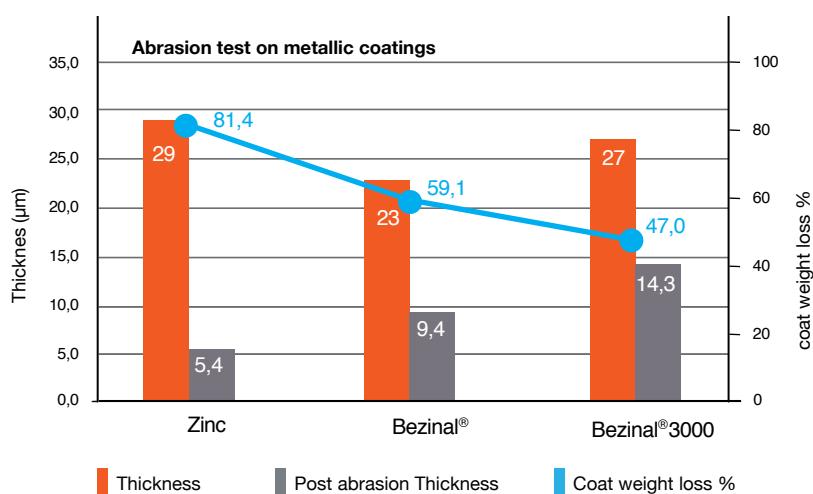
## ➤ Salt spray testing



The figure on the side compares the performance of zinc to Bezinal® and Bezinal® 3000.

Salt spray testing is done according ISO 9227 and ASTM B117 (35°C – 5% NaCl).

## ➤ Abrasion resistance and Vicker hardness



The wear performance of Bezinal® coated wires has been tested using the abrasion Taber test. In this test, different coated wire samples are submitted to controlled rubbing with a hard material (artificial diamond).

The coat weight loss is measured after the test. As can be seen in the figure, Bezinal® and especially Bezinal® 3000 are more wear resistant.

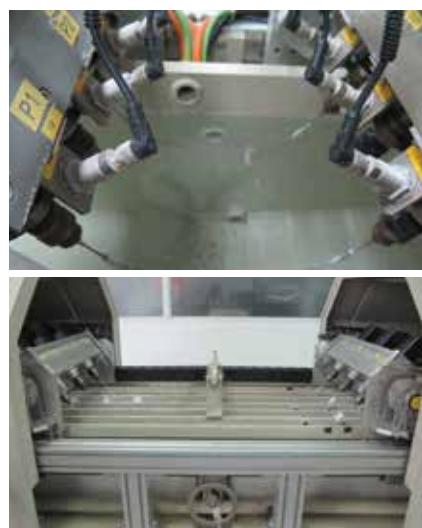
Wire specimen	Vicker hardness
Redrawn galvanized wires	50-60 µHV
Redrawn Bezinal® coated wires	50-55 µHV
Redrawn Bezinal® 3000 coated wires	95-130 µHV

The Vicker hardness has also been tested. For this test wire samples with a 1600 N/mm<sup>2</sup> tensile strength were used. As can be seen in the table on the side, Bezinal® 3000 is clearly the harder coating.

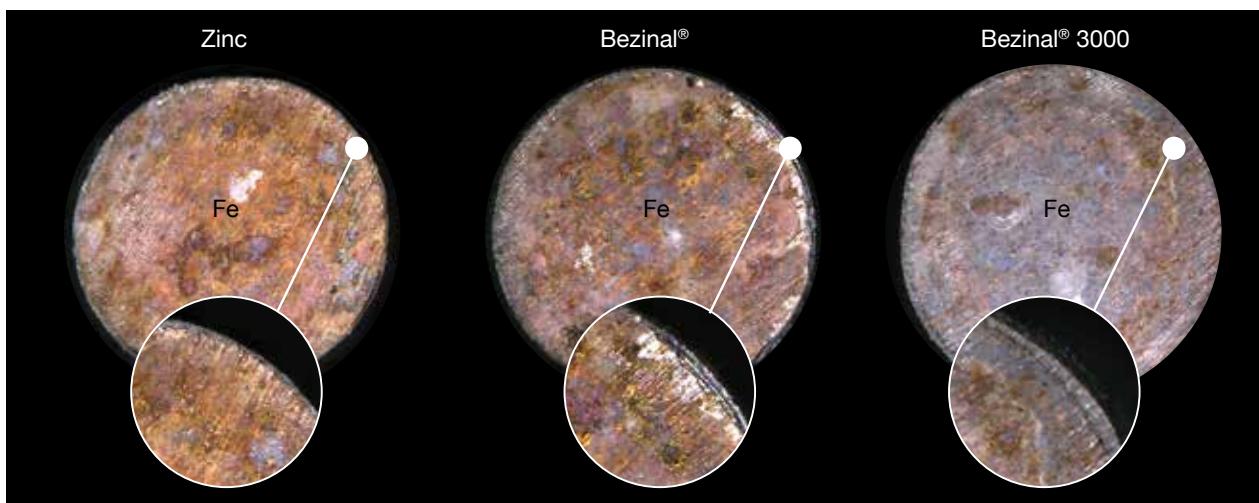
## ➤ Superior corrosion-fatigue performance

Bekaert uses the corrobend test to measure rotating bending fatigue and corrosion resistance in artificial seawater or other specific corrosive environments. The test below illustrates the corrosion fatigue (fretting) of coated strand samples with a 7 x 0,6 mm diameter. As can be seen, both Bezinal® and Bezinal® 3000 coated samples are more stable than galvanized strands.

Strand sample	Corrosion fatigue tests (million cycles M before failure)	
	Bending stress 300Mpa/600rpm	Evaluation
Bright steel	0,2 M – 0,30 M	No resistance in this test
Zinc	9,2 M – 18,4 M	Better resistance in this test
Bezinal®	22,0 M – 30,7 M	Higher and stable performance
Bezinal® 3000	23,8 M – 30,6 M	Higher and stable performance

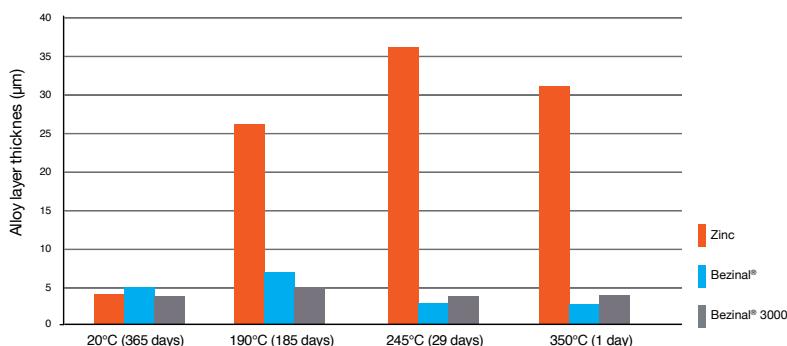


## ➤ Cathodic protection



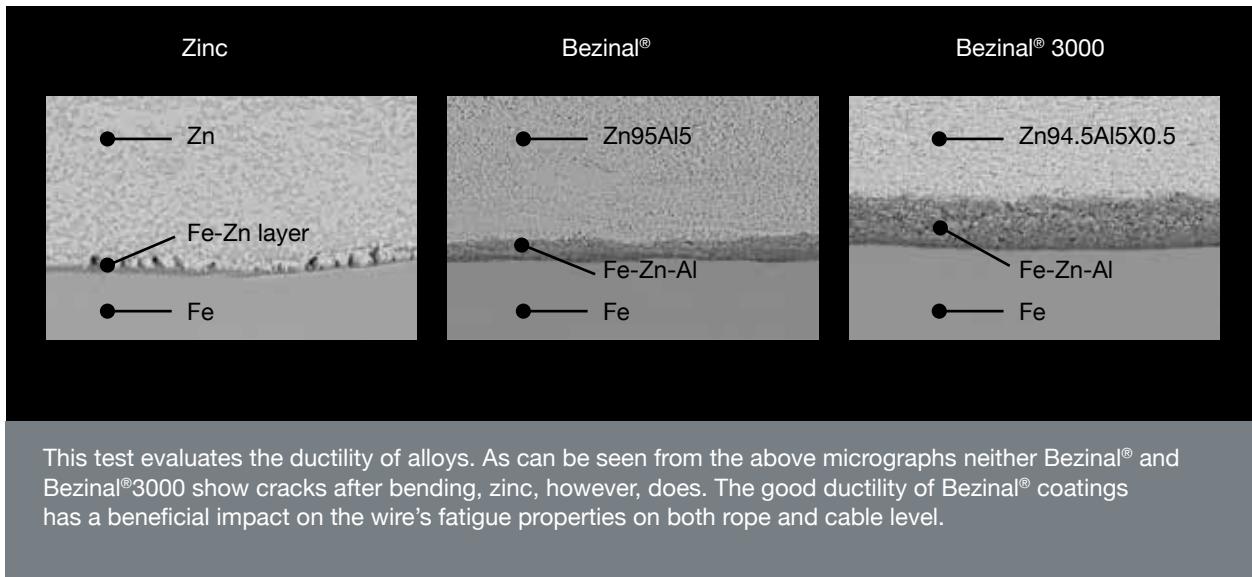
Bezinal® 3000 offers excellent cathodic protection. As a result, the self-healing property of the coating (or its capacity to cope with uncovered spots) is far more superior to that of zinc and regular Bezinal®. The pictures above show cut-end samples of 3 x 4 mm coated wires after three years of outdoor exposure. As can be seen, Bezinal® 3000 offers a much better cathodic protection.

## ➤ Thermal stability testing



In some applications ropes and cables are exposed to high temperatures. When galvanized wire is exposed to temperatures higher than 150°C, the brittle intermetallic FeZn will grow and zinc will start to flake. The intermetallic layers of Bezinal® and Bezinal®3000 are more ductile. While zinc fails at 150°C, Bezinal® and Bezinal®3000 are temperature resistant up to 350°C.

## Coating ductility testing



# Product specification

## Dynamic ropes and cables

### Redrawn wire class B according to EN-10264-2

Diameter		1570	1770	1960	2060	2160	2260
<b>Tensile grades - Bezinal® class B</b>							
0,50	1,59	•	•	•	•	•	•
0,50	1,75	•	•	•	•	•	
0,50	1,79	•	•	•	•		
0,50	1,80	•	•	•			
0,50	2,00	•	•				
0,50	2,20	•	•				
0,50	2,60	•					
<b>Tensile grades - Bezinal®3000 class B</b>							
1,05	3,40	•	•	•	•	•	•
1,05	4,15	•	•	•	•	•	
1,05	5,00	•	•	•	•		
1,05	6,15	•	•	•			
1,05	7,00	•	•				

Remark: other diameters on request.

## Static ropes and cables

### Final coated wire class A according to EN-10264-2

Diameter		1370	1470	1570	1670	1770	1860	1960
<b>Tensile grades - Bezinal® class A</b>								
2,00	4,00	•	•	•	•	•	•	•

Diameter		1370	1570	1770	1860	1960	2060
<b>Tensile grades - Bezinal®3000 class A</b>							
3,45	5,50	•	•	•	•	•	•
3,45	6,00	•	•	•	•	•	
3,45	6,50	•	•	•	•		
3,45	7,00	•	•	•			

Remark: other diameters on request.

## Packaging

- Spoolless cores Z2
- Spoolless cores Z3
- Fabric coils COID 1000/1200

### Fitness for downstream processing

The wire's consistent dimensions and high ductility enable smooth downstream processing (e.g. stranding, compacting and armoring operations). Our standard wire range is produced according to International norms and specifications. We are also able to meet more demanding customer requirements in terms of coat weight, dimensional tolerances and mechanical properties.

# Discover the benefit for your application

	Fishing ropes	Offshore hoisting ropes	Cableway ropes	Shaft mining ropes	Suspended structures	Stay cables	Rock protection strands	ROV cables	Overhead power lines
Atmospheric Anti-corrosion			●	●	●	●	●		●
Marine Anti-corrosion	●	●						●	
Tensile / strength / breaking load		●	●	●	●	●		●	●
Wear / abrasion resistance	●	●	●	●			●		●
Ductility / fatigue resistance		●	●	●	●	●	●	●	●
Temperature resistance									●
Flat or shaped wire available			●	●	●				
Processability	●	●	●	●	●	●	●	●	●



## Fishing ropes

Based on field feedback from different regions, fishing trawling ropes made from Bezinal®3000 coated wires can last over 50% longer than ropes made from wire coated with zinc or Galfan. This is due to the exceptional corrosion and abrasion resistance of the coating. As a result, the maintenance downtime of the ropes is significantly less, leading to important cost-savings for the end-customer.

## Offshore hoisting ropes

Bezinal®3000 coated wires can increase the service-life of ropes that cannot be re-lubricated in the field, leading to fewer replacements and less downtime. The wires are the perfect solution for deepwater marine applications as their high tensile strength and high breaking load for a given rope diameter allows for longer rope lengths.

## Cable way rope

Bezinal®3000 coated wires are a reliable and durable wire solution for track and haulage cable way ropes. The highly ductile wires feature a high fatigue resistance. The high tensile strength wire offers several advantages. It can allow a longer span between towers, or it can enable the production of lighter structures for a given breaking load.



## Shaft mining ropes

Ropes made from Bezinal®3000 coated wire allow heavier skip loads thanks to their high breaking load. The coating resists pH values of 3 or higher, leading to a longer rope-life in mining environments. Less maintenance and fewer replacements means less downtime as a result.



## Wire and ropes for suspended structures

Increase the service-life of your suspended structures (e.g. suspension bridges, roof and outside wall support, support ropes and antennas) with Bezinal®3000 coated wires. Thanks to the higher tensile strength of the wire, lower weight structures can be realized for a given breaking load



## Stay cables

Enhance fatigue properties of your stay cables by using Bezinal®3000 coated wire strands. These robust seven wire strands are tightly extruded with an HDPE sheath for superior corrosion resistance, making your stay cables safer and longer lasting.



## Wire and strands for rock protection

No coating is better resistant to atmospheric corrosion than Bezinal®3000. The breaking load of wires coated with Bezinal®3000 withstands the most forceful impact levels. They are available in wide range of tensile strengths and can be extruded with polymer for extra corrosion protection.



## ROV cables

Lighter cables reduce the drag and fuel consumption of your ROVs. Bezinal®3000 coated wires have a high breaking load for any given diameter, and they feature excellent bending fatigue properties. These characteristics amount to a durable cable solution suitable for marine environments. Combine them with super high tensile to create durable armoring layers or strength members.



## Overhead power lines

The Bezinal®3000 coated wires enable a safe conductor operation at maximum capacity. Thanks to their thermal resistance up to 350°C and their low weight for a given breaking load, it is the winning solution for High Temperature Low Sag (HTLS) conductors. The high corrosion resistance of the Bezinal®3000 coating eliminates or reduces the need for lubrication during core production.

Bekaert is a world market and technology leader in steel wire transformation and coating technologies.

To be the preferred supplier of steel wire products and solutions, we consistently deliver superior value to our customers worldwide.

Bekaert (Euronext Brussels: BEKB) was established in 1880 and is a global company with approximately 30 000 employees worldwide.



#### Contact us

More  
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