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BEVA GABION

CAGE OR BOX MADE FROM GALVANIZED / PVC COATED STEEL WIRE, FILLED WITH ROCKS FOR USE IN CIVIL ENGINEERING, INFRASTRUCTURE, EROSION CONTROL, ROAD BUILDING AND RETAINING WALLS.

HEXAGONAL WOVEN GABION (BRONJONG KAWAT ANYAMAN MESIN)



03-0090-1999
03-3046-1992

STANDAR NASIONAL INDONESIA

ABOUT

Gabion (Bronjong Kawat) is a structuring technique that has been used for a long period of time. The effectiveness of this method has been proven.

Now, with modern technology and up-to-date packaging, it is comparable with competitive products / methods in areas such as ground support structures : river dam retainers, coast stield structures, high dams and other support structures.

Beva Gabion are using Heavy Galvanized Zinc Coated Wire raw material and manufacturing PVC Coated Heavy Galvanized Wire.

The manufacturing process of Gabions incorporating the use of modern manufacturing techniques that meet the quality standard of BS-1052 and BS-443, SNI No. 03-0090-1999 & SNI No. 03-3046-1992, and ISO 9001 : 2015.

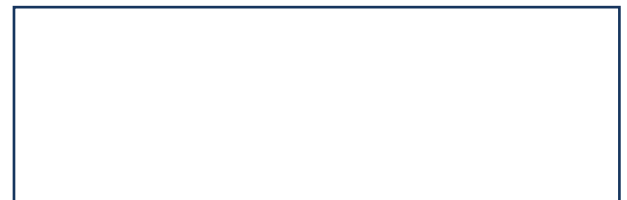
ADVANTAGES

Beva Gabions produced by machinery of Europe, as well as high-quality raw materials and quality management system ISO 9001 : 2015 produces premium products so that you can get the rest assured.

APPLICATIONS

- River Dam Retainers
- Coast Stield Structures
- High Dams
- and other support structures

AUTHORIZED DISTRIBUTOR :



OUR PRODUCTS



GABIONS

Standard Gabions Box Size

| Box Size L x W x H (M) | No. of Diaphragms | Mesh Size mm |
|---------------------------|----------------------|-----------------|
| 2.0 x 1.0 x 0.5 | 1 | 80 x 100 mm |
| 3.0 x 1.0 x 0.5 | 2 | |
| 4.0 x 1.0 x 0.5 | 3 | |
| 3.0 x 1.5 x 0.5 | 2 | |
| 2.0 x 1.0 x 1.0 | 1 | |
| 3.0 x 1.0 x 1.0 | 2 | |

All Specification can be change without prior notice
Spesifikasi dapat berubah sewaktu-waktu bila diperlukan

Special Order can be made for special application
Pesanan khusus dapat dibuat sesuai dengan kebutuhan

MATTRESS

Standard Mattress Box Size

| Box Size L x W x H (M) | No. of Diaphragms | Mesh Size mm |
|---------------------------|----------------------|-----------------|
| 6.0 x 1.0 x 0.30 | 5 | 80 x 100 mm |
| 6.0 x 2.0 x 0.30 | 5 | |
| 5.0 x 2.0 x 0.30 | 4 | |
| 6.0 x 2.0 x 0.23 | 5 | |
| 5.0 x 2.0 x 0.23 | 4 | |
| 4.0 x 2.0 x 0.23 | 3 | |

Quality Management ISO 9001 : 2008 with approval from KAN
(Komite Akreditasi Nasional)

Quality Standard : SNI 03-0090-1999 and SNI 03-3046-1992
(LS Pro Kementerian Perindustrian Republik Indonesia)

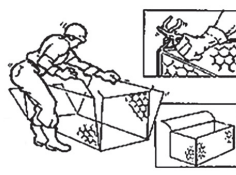


PRODUCT INSTALLATION



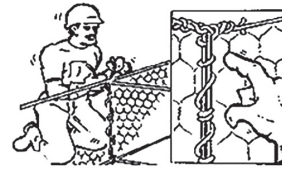
Undo the bundle and unfold each gabion over a hard flat surface.
Tread on the netting to flatten it out.

Lepaskan ikatan kemasan & keluarkan satu per satu bronjong, letakan pada permukaan yang datar serta luruskan netting bronjong tersebut.



Fold the panels to form a cage. Join the top corners twisting together the wires from the panels.

Lipat sisi-sisi bronjong hingga membentuk sangkar. Ikat ujung-ujung sisi atas dari bronjong tersebut dengan cara saling melilitkannya.



Take 1.5 meters of fastening wire. Tie it to lower part of the gabion edge and sew the adjoining panels with alternate single and double turns each mesh. Repeat the procedures for the diaphragms.

Ambil kira-kira 1.5 m kawat ikat. Ikatkan pada setiap sisi bronjong hingga membentuk kotak. Ikan dengan cara kombinasi ikatan seperti pada gambar.



Tie a number of gabion panels together with same kind of sewing. Carry them to the work site and already in position. Sew their adjoining panels.

Ikat bronjong-bronjong tersebut dengan menggunakan ikatan yang sama. Bawa bronjong-bronjong tersebut pada lokasi yang sudah ditentukan dengan lainnya sesuai dengan gambar.

PRODUCT SPECIFICATION

BRONJONG BERGALVANIS TEBAL DENGAN NO. SNI 03-0090-1999



| Kawat Anyaman | | | | Kawat Sisi | | | | Kawat Ikat | | | |
|---------------|-----------|----------------------------|-----------------|------------|-----------|----------------------------|-----------------|------------|-----------|----------------------------|-----------------|
| Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran | Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran | Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran |
| 2.7 mm | ± 4,0 % | Min. 260 gr/m ² | 28 kali | 3.4 mm | ± 4,0 % | Min. 275 gr/m ² | 26 kali | 2.0 mm | ± 4,0 % | Min. 240 gr/m ² | 38 kali |
| 3.0 mm | ± 4,0 % | Min. 275 gr/m ² | 26 kali | 4.0 mm | ± 4,0 % | Min. 290 gr/m ² | 21 kali | 2.0 mm | ± 4,0 % | Min. 240 gr/m ² | 38 kali |

BRONJONG BERGALVANIS TEBAL LAPIS PVC DENGAN NO. SNI 03-3046-1992



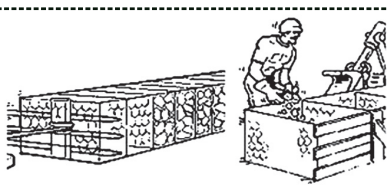
| Kawat Anyaman | | | | Kawat Sisi | | | | Kawat Ikat | | | |
|------------------------------------|-----------|----------------------------|-----------------|------------------------------------|-----------|----------------------------|-----------------|------------------------------------|-----------|----------------------------|-----------------|
| Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran | Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran | Dia. | Toleransi | Berat Lapisan Seng | Jumlah Puntiran |
| 2.7 mm Dilapis 3.8 mm | ± 4,0 % | Min. 260 gr/m ² | 28 kali | 3.4 mm Dilapis 4.6 mm | ± 4,0 % | Min. 275 gr/m ² | 26 kali | 2.0 mm Dilapis 3.0 mm | ± 4,0 % | Min. 240 gr/m ² | 38 kali |

- Kuat tarik minimum 41 kgf/mm²
- Ukuran anyaman 80 x 100 mm dengan lilitan ganda
- Diaphragma setiap 1 (satu) meter panjang
- Ukuran kotak (panjang, lebar, tinggi) toleransi ± 5,0%
- Untuk Bronjong berlapis PVC uji semprot garam 500 jam (salt spray test)



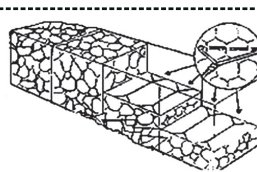
... into groups, using the ... Carry the groups of boxes ... tie them to the others ... w the groups together at ... ining edges.

... onjong dengan cara ... ai cara sebelumnya. ... ong-bronjong ... kerja dan ikatkan satu ... dengan posisi rancangan.



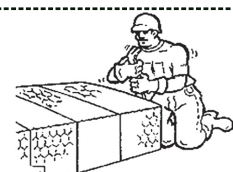
After placing a number of gabions in position, and before filling them, stretch them using a simple strainer of use wooden boxing to hold them in place.

Setelah bronjong-bronjong tersebut diletakkan pada posisinya, dan sebelum kita mengisinya, luruskan sisi bronjong tersebut dengan menggunakan alat bantu pelurus sederhana dengan menggunakan papan kayu untuk mempertahankan kelurusannya.



Fill the gabions 1/3 full. Fix bracing wires & fill to 2/3 full. Fix more bracing wires & finish filling to 3 to 5 cm above the height of the cage. REMEMBER : do not completely full a cage before the adjoining one is partially full.

Isi bronjong dengan batu 1/3 bagian. Pasang kawat penguat & isi kembali hingga penuh dengan 3 - 5 cm di atas tinggi kotak bronjong. **INGAT** : Jangan mengisi bronjong langsung penuh, isilah bertahap per bagian.



Close the gabions by folding over the tops and trying them in the same way.

Tutup bagian atas bronjong sesuai dengan lipatnya dan ikat. Lakukan hal yang sama untuk bronjong-bronjong yang lain.



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BEVA GABION

WELDED MESH CAGE OR BOX MADE FROM HEAVY GALVANIZED OR BEZINAL 2000 OR HOT DIP GALVANIZED STEEL WIRE, FILLED WITH ROCKS FOR USE IN CIVIL ENGINEERING, INFRASTRUCTURE, EROSION CONTROL, ROAD BUILDING AND RETAINING WALLS.

WELDED GABIONS (BRONJONG JARING KAWAT BAJA LAS)

SNI 03-3750-1995
STANDAR NASIONAL INDONESIA

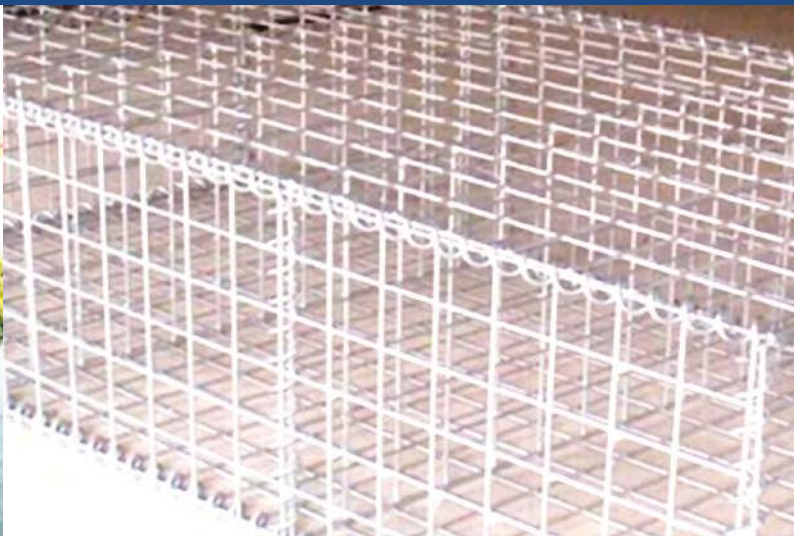
ADVANTAGES

- Blends easily and harmonious with the natural surroundings.
- Low cost alternative to concrete or masonry structures.
- Very high resistance to natural forces due to better tensile strength.
- Can withstand any unpredictable movement or settlement without loss of stability.
- Simple and speedy installation, making it cost effective.
- Quality finish and appearance is more aesthetically pleasing.
- Weld mesh gabion are manufactured from Bekaert Bezinal®2000 low carbon wire with 90% Zinc and 10% aluminium Alloy Coated for high performance (BS EN10244-2, Class A).
- Produced with European machine for best quality.
- More rigid than woven mesh resulting in a more uniform finish when built.
- Quicker and cheaper to install than Woven Mesh Gabions because no pre-stretching required.
- Special gabion sizes and mesh configurations such as gabions with 5mm diameter front mesh and 4mm diameter mesh elsewhere can be assembled to order.

APPLICATIONS

- Retaining wall structures
- River and canal training works
- Erosion and scour protection roadway protection ; bridge protection
- Rockfall and soil erosion protection
- Architectural cladding for walls

OUR PRODUCTS



GABION BOXES

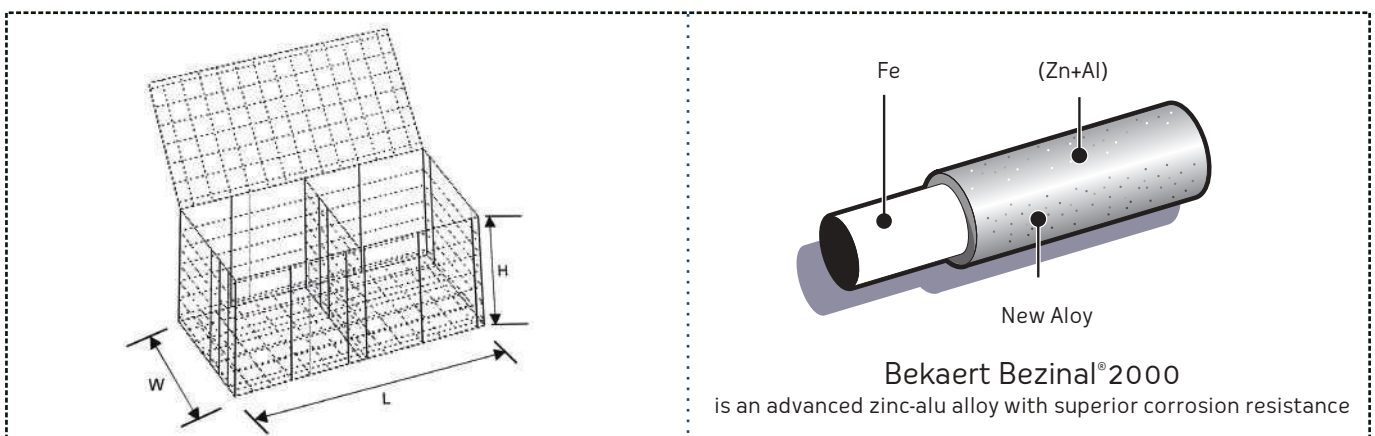
Gabion boxes are designed on the principle of mass earth retaining wall. The strength of the wire mesh helps to withstand the forces generated by retained soil.

| Nominal Box Sizes | No. of Diaphragms | Standard Mesh Sizes | Standard Wire Diameter |
|-------------------|-------------------|---------------------------------------|---|
| LxWxH (M) | (pcs) | (mm) | |
| 2 x 1 x 0,5 | 1 | 50 x 50 or 75 x 75 or 100 x 100 | Bekaert Bezinal®2000 Heavy Galvanized or 3,0 mm or 4,0 mm or 5,0 mm |
| 2 x 1 x 1 | 1 | | |
| 3 x 1 x 0,5 | 2 | | |
| 3 x 1 x 1 | 2 | | |
| 4 x 1 x 0,5 | 3 | | |
| 4 x 1 x 1 | 4 | | |

All Specification can be change without prior notice
Spesifikasi dapat berubah sewaktu-waktu bila diperlukan

Special Order can be made for special application
Pesanan khusus dapat dibuat sesuai dengan kebutuhan

PRODUCT ILLUSTRATION



PRODUCT SPECIFICATION

WELDED MESH GABIONS

(BRONJONG JARING KAWAT BAJA LAS (JKBL) SNI. 03-3750-1995

GALVANIZED/ZINC - 10% ALUMINUM-MISCHMETAL ALLOY-COATED

CARBON STEEL WIRE,

STANDARD ASTM A 856/A 856M-03 & AS/NZS 4534:1998

| Wire and Mesh Size (Kawat dan Ukuran Lubang Jaringan) | | | | | | Lacing Wire (Kawat Ikat) | | |
|---|-----------|---|---|--------------------------------|--------------------------------|--------------------------|-----------|---|
| Dia. | Toleransi | Berat Lapisan Seng | Ukuran Lubang | Kuat Tarik | Kuat Geser Las | Dia. | Toleransi | Berat Lapisan Seng |
| 3.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy | 50 x 50 mm + 3 mm 75 x 75 mm + 3 mm 100 x 100 mm + 3 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 3.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy |
| 4.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy | 50 x 50 mm + 4 mm 75 x 75 mm + 4 mm 100 x 100 mm + 4 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 4.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy |
| 5.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy | 50 x 50 mm + 5 mm 75 x 75 mm + 5 mm 100 x 100 mm + 5 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 5.0 mm | ± 4,0 % | Min. 180 gr/m ² w/ 10% Aluminum Alloy |

HEAVY GALVANIZED CARBON STEEL WIRE

STANDARD SNI 03-0090-1987, BS 443 & BS 1052:1986

| Wire and Mesh Size (Kawat dan Ukuran Lubang Jaringan) | | | | | | Lacing Wire (Kawat Ikat) | | |
|---|-----------|----------------------------|---|--------------------------------|--------------------------------|--------------------------|-----------|----------------------------|
| Dia. | Toleransi | Berat Lapisan Seng | Ukuran Lubang | Kuat Tarik | Kuat Geser Las | Dia. | Toleransi | Berat Lapisan Seng |
| 3.0 mm | ± 4,0 % | Min. 275 gr/m ² | 50 x 50 mm + 3 mm 75 x 75 mm + 3 mm 100 x 100 mm + 3 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 3.0 mm | ± 4,0 % | Min. 240 gr/m ² |
| 4.0 mm | ± 4,0 % | Min. 290 gr/m ² | 50 x 50 mm + 4 mm 75 x 75 mm + 4 mm 100 x 100 mm + 4 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 4.0 mm | ± 4,0 % | Min. 240 gr/m ² |
| 5.0 mm | ± 4,0 % | Min. 295 gr/m ² | 50 x 50 mm + 5 mm 75 x 75 mm + 5 mm 100 x 100 mm + 5 mm | Min. 41 Kgf/mm ² | Min. 25 Kgf/mm ² | 5.0 mm | ± 4,0 % | Min. 240 gr/m ² |

- Ukuran Kotak (panjang, lebar, tinggi) toleransi + 3,0%
- Diaphragma setiap 1 (satu) meter panjang

Quality Management ISO 9001 : 2015 with approval from KAN (Komite Akreditasi Nasional)

Quality Standard : SNI 03-3750-1995 (Register Kementerian Perindustrian Republik Indonesia and ASTM A974



SUPERIOR CORROSION RESISTANT COATING

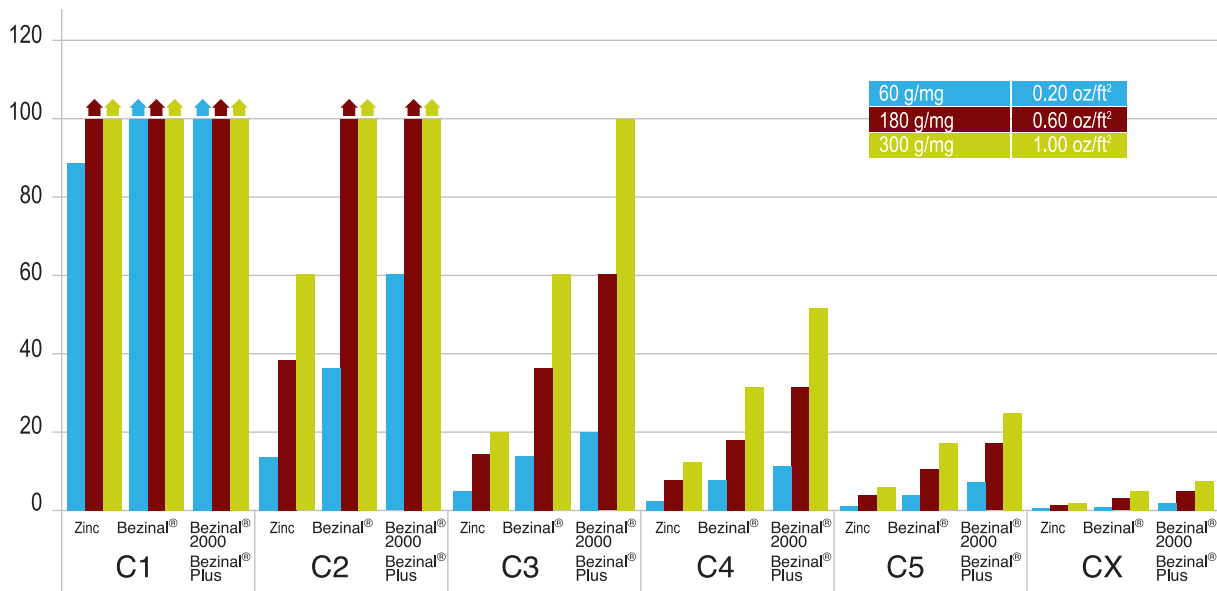
Expected lifetime in different corrosion classes (according to EN ISO 9224:1992)

The relative performance of Bekaert Bezinal coatings versus zinc in these accelerated tests, combined with the specified coat weight loss per year for a zinc coating, allows to make a calculation estimation of expected lifetime in the different corrosivity classes defined in EN ISO 9223.

Expected lifetime for the different coating classes and different corrosivity categories is given in the graph below.

Extensive outdoor exposure programs on different Bekaert sites representing different environment corrosivities, are launched.

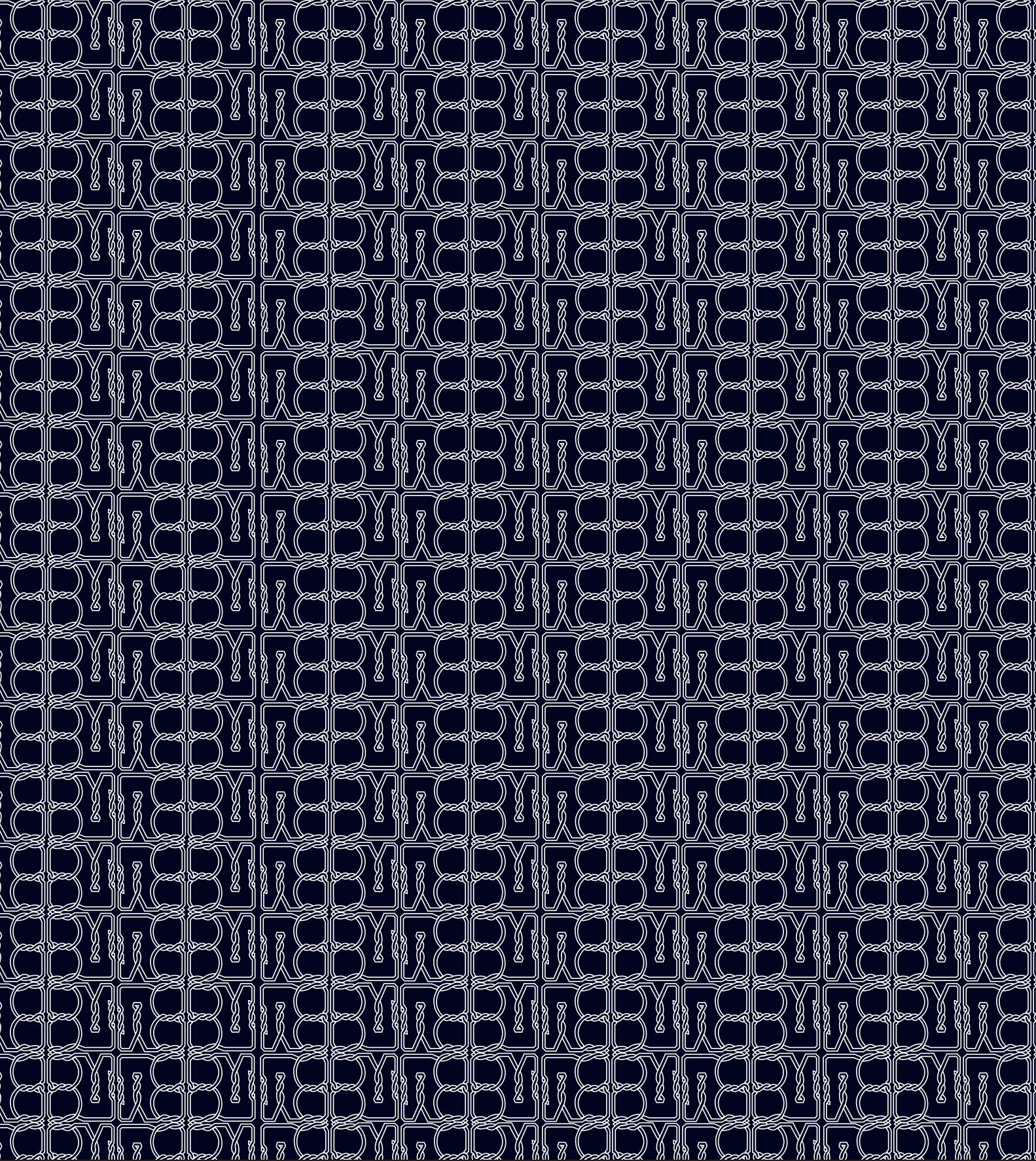
Expected lifetime (average) - years until 5% DBD



The above described factors are used to define different corrosivity classes C1 to CX, these are described in the standard EN ISO 9223 and summarized in the table below.

The standard EN ISO 9224:1992 defines the zinc coating loss per year for each of the corrosivity classes; this is as well mentioned in the table below.

| Agressivity of environment | Loss of zinc in the first year (*) | | External | Internal |
|----------------------------|------------------------------------|------------------|--|--|
| | µm | g/m ² | | |
| C1 very low | < 0.1 | < 0.7 | | Heated building with clean atmospheres, eg. offices, shops, schools, hotels.. |
| C2 low | 0.1 - 0.7 | 0.7 - 5 | Atmospheres with low level of pollution mostly rural areas. | Unheated buildings where condensation may occur, eg. depots, sport halls.. |
| C3 medium | 0.7 - 2.1 | 5 - 15 | Urban & industrial atmospheres, moderate sulfur, dioxide pollution. Coastal areas with low sanity. | Production rooms with high humidity & some air pullution, eg. food-processing plants, laundries, breweries, dairies... |
| C4 high | 2.1 - 4.2 | 15 - 30 | Industrial areas & coastal areas with moderate sanity. | Chemical plants, swimming pools, coastal ship & boatyards. |
| C5 very high | 4.2 - 8.4 | 30 - 60 | Industrial aread with high humidity & aggressive atmospheres, coastal & offshore areas with high sanity. | Buildings or areas with almost permanent condensation & with high pollution. |
| CX extreme | 8.4 - 25 | 60 - 180 | Extreme industrial areas, coastal & offshore areas with occasional contact with salt spray. | Spaces with almost permanent condensation or extensive periods of exposure to extreme humidity effects &/or with high pollution from production process. |



 **BEVANANDA**

**"THE NO.1 TRUSTED STEEL MANUFACTURER
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