BS EN 10223-8:2013

BSI Standards Publication

Steel wire and wire products for fencing and netting

Part 8: Welded mesh gabion products

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National foreword

This British Standard is the UK implementation of EN 10223-8:2013.

The UK participation in its preparation was entrusted to Technical Committee ISE/106, Wire Rod and Wire.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Fils et produits tréfilés en acier pour clôtures et grillages - Partie 8: Gabions à mailles soudées

Stahldraht und Drahterzeugnisse für Zäune und Drahtgeflechte - Teil 8: Geschweißte Gitter für Steinkörbe

This European Standard was approved by CEN on 29 June 2013.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 10223-8:2013) has been prepared by Technical Committee ECISS/TC 106 “Wire rod and wires”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

EN 10223, *Steel wire and wire products for fencing and netting* consists of the following parts:

— *Part 1: Zinc and zinc-alloy coated steel barbed wire*

— *Part 2: Hexagonal steel wire netting for agricultural, insulation and fencing purposes*

— *Part 3: Hexagonal steel wire mesh products for civil engineering purposes*

— *Part 4: Steel wire welded mesh fencing*

— *Part 5: Steel wire woven hinged joint and knotted mesh fencing*

— *Part 6: Steel wire chain link fencing*

— *Part 7: Steel wire welded panels for fencing*

— *Part 8: Welded mesh gabion products* (the present document)

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

1.1 Subject

This European Standard specifies requirements for the mechanical properties, dimensions, coatings, test methodology and delivery conditions of welded mesh gabions products. The general meaning of welded mesh gabion is a metallic box made of welded wire mesh to be filled with stone or other suitable material.

Only the characteristics of the metallic cage are subject of this document.

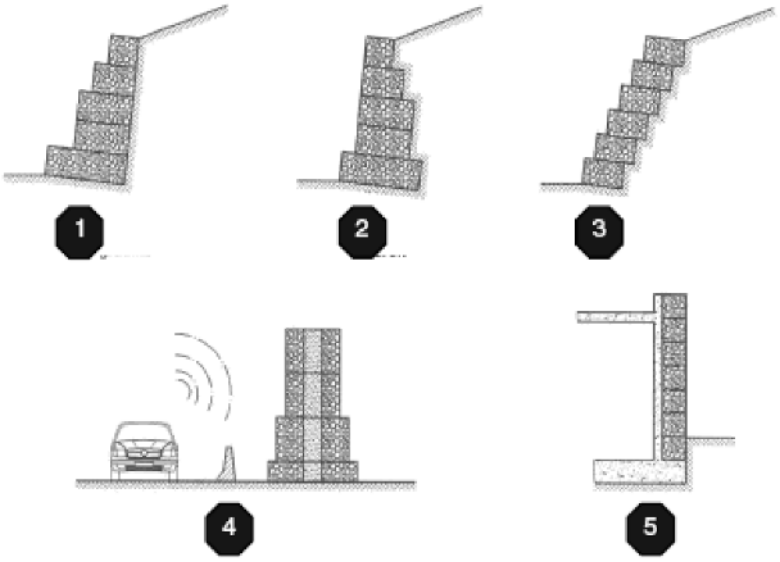
Filling materials, e.g. coarse armourstone, are covered in other standards.

This document covers gabions produced from welded wire fabric and accessories coated with a zinc coating, a hot-dip galvanization or a zinc-aluminium alloy, polyvinyl chloride (PVC) or stainless steel. Accessories include complementary materials such as spiral binders, rings, lacing wires, tie-rods or spacers.

1.2 Intended use

The intended use for the considered construction product is: earth retention, soil reinforcement systems, river training, erosion control purposes, slope retention, sound barriers, fencing, landscaping, covering or cladding as well as architectural purposes.

Figure 1 below shows some relevant examples of applications of gabions.



Key

1 stepped face retaining structure
2 flush face retaining structure
3 slope protection
4 free standing walls, e.g. sound barrier
5 claddings, e.g. for architectural applications

Figure 1 — Example of applications of gabions

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10218-2:2012, *Steel wire and wire products — General — Part 2: Wire dimensions and tolerances*

EN 10244-1, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

EN 10244-2, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc or zinc alloy coatings*

EN 10245-1, *Steel wire and wire products — Organic coatings on steel wire — Part 1: General rules*

EN 10245-2, *Steel wire and wire products — Organic coatings on steel wire — Part 2: PVC finished wire*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461)*

EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2)*

EN ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3)*

EN ISO 6988, *Metallic and other non-organic coatings — Sulfur dioxide test with general condensation of moisture (ISO 6988)*

EN ISO 9223:2012, *Corrosion of metals and alloys — Corrosivity of atmospheres — Classification, determination and estimation (ISO 9223:2012)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227)*

EN ISO 16120-2, *Non-alloy steel wire rod for conversion to wire — Part 2: Specific requirements for general-purpose wire rod (ISO 16120-2)*

DIN 50018, *Testing in a saturated atmosphere in the presence of sulfur dioxide*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
gabion
welded wire panelled container, partitioned, of variable size, and filled with stone or other suitable material at the site of use, or to be factory prefilled to form flexible, permeable, monolithic structures such as retaining walls, sea walls, channel linings, revetments, and weirs for erosion control

Note 1 to entry: See Figures 2 a) and 2 b).

3.2
gabion mattress
gabion with a relatively short height in comparison with the width and length dimensions, generally used for river bank, slope protection or anti-scour erosion protection

Note 1 to entry: The inner partitions that divide the cage are called diaphragms and are usually spaced at one metre intervals. At the customer's request, this interval can be reduced. The gabion current sizes are shown in Table 2.

3.3
trapezoidal gabion
gabion of which the width of the lid is smaller than the width of the base

Note 1 to entry: See Figure 2 b).

3.4
bracing tie
length of suitable wire used to brace the gabion either across corners or front to back

3.5
lacing wire
length of suitable wire used to assemble gabions and gabion mattresses

3.6
spirals
spiral binder
spiral binders for gabions; section of steel wire coated with zinc, zinc-aluminium alloy or organic over-coating, or stainless steel wire forming a spiral and used to assemble and interconnect empty gabions and to close and secure the units filled with stone, as a replacement for lacing wire or rings

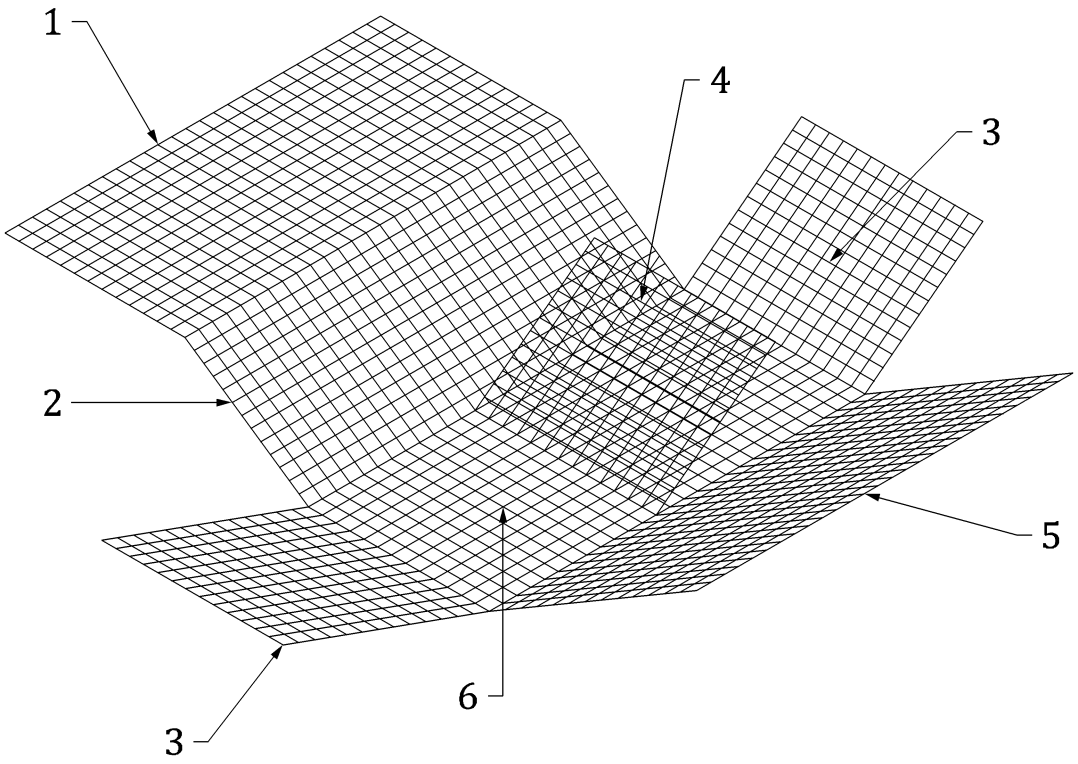
3.7
joining pin
piece of steel wire with J-shaped end, used to attach adjacent gabions assembled by spiral

3.8
gabion ring
C-shaped ring, made from very high resistance zinc or zinc-aluminium alloy coated steel wire or stainless steel wire, used to assemble and interconnect the empty gabions and to close and secure the units filled with stone

3.9
mesh sizes
centre-to-centre distance between two consecutive wires

3.10
looped gabion
gabion existing of panels with looped ends which are connected to each other by locking pins

3.11
locking pin
from metallic coated wire or stainless steel made pin, used to connect panels with looped ends and thus build a looped gabion box or a cellular structure

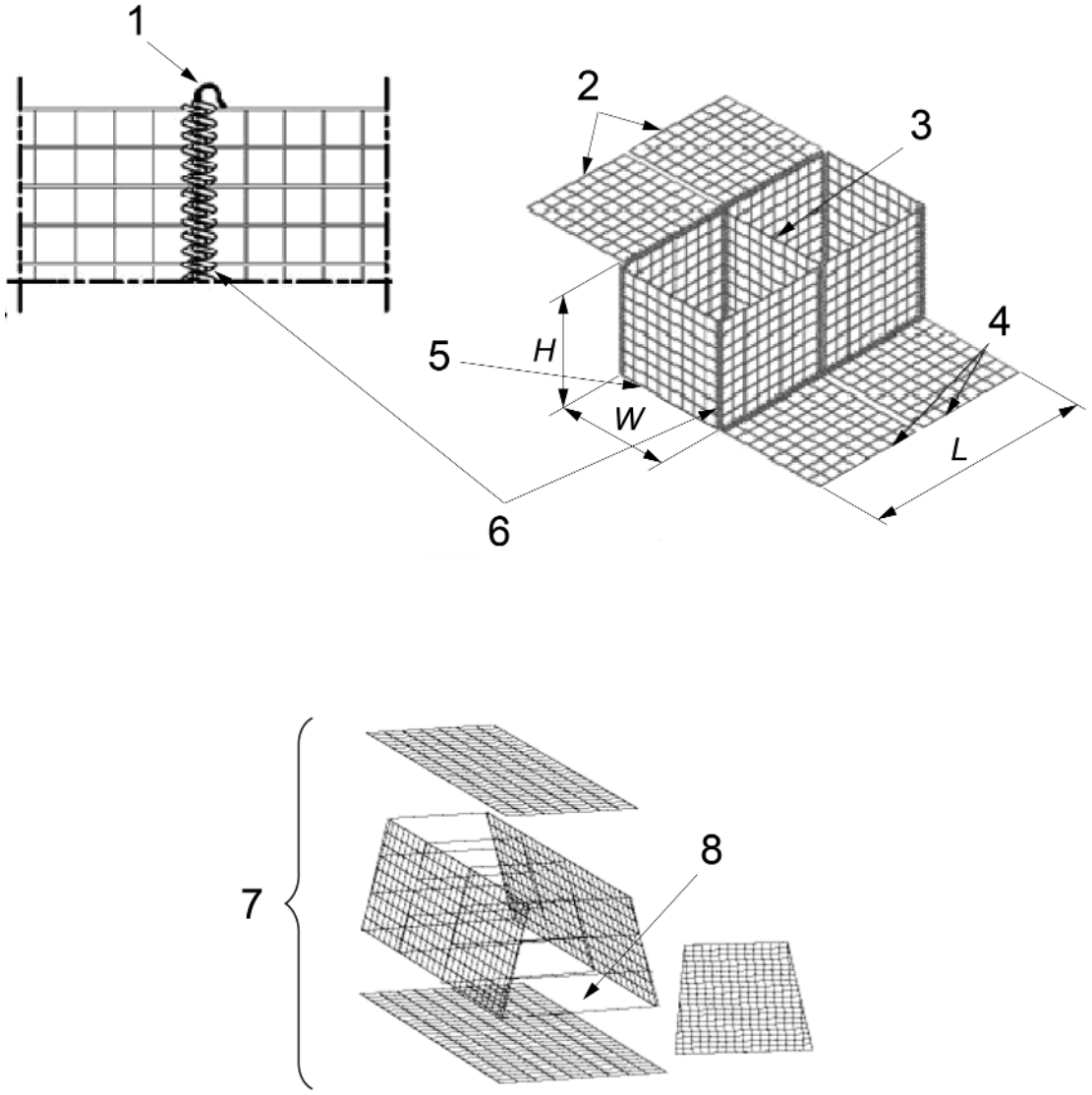


Key

1 lid panel
2 back panel
3 end panel
4 diaphragm panel
5 face panel
6 base panel

Factory assembly of panels: one clip every 225 mm on all joints.

Figure 2 a) — Some illustrations of definitions

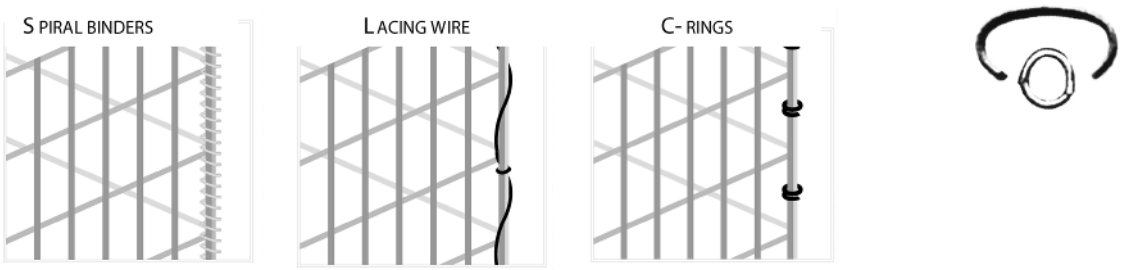


Key

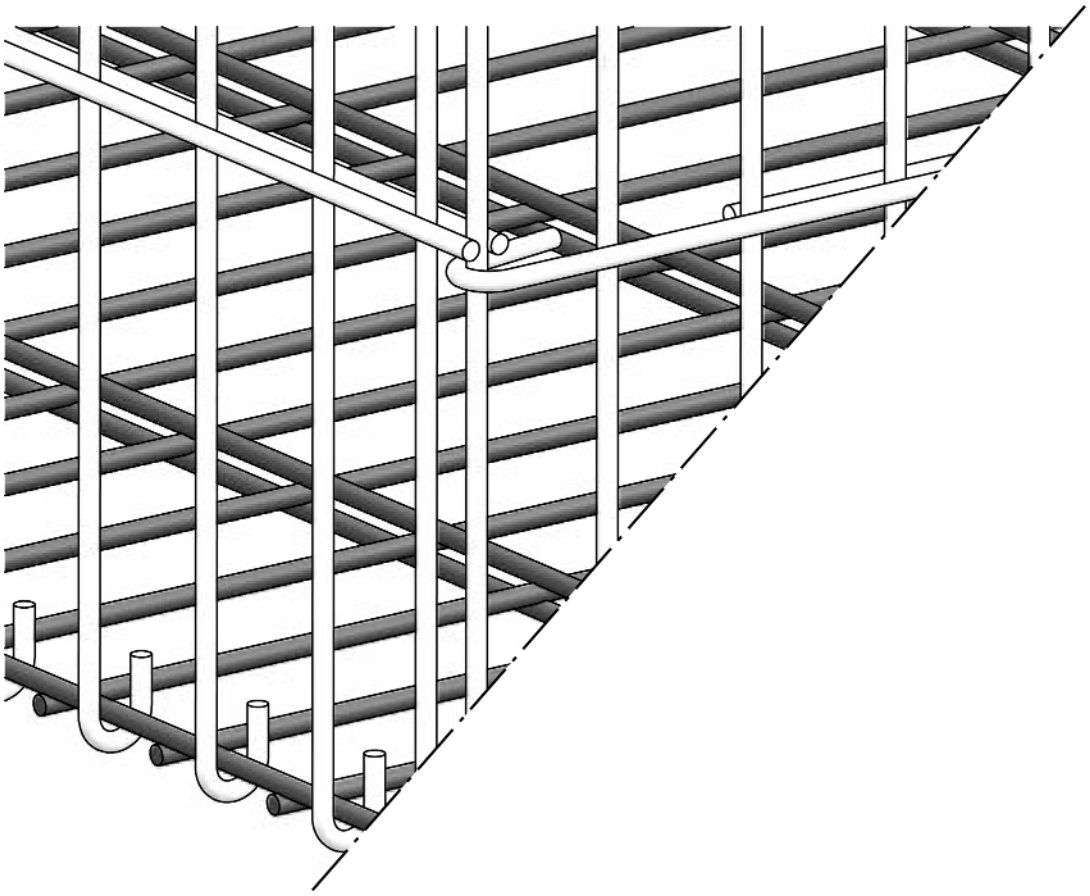
1 joining pin
2 lid
3 diaphragm
4 base
5 end
6 spirals
7 trapezoidal gabion
8 bracing tie
H height
L length
W width

Figure 2 b) — Some illustrations of definitions

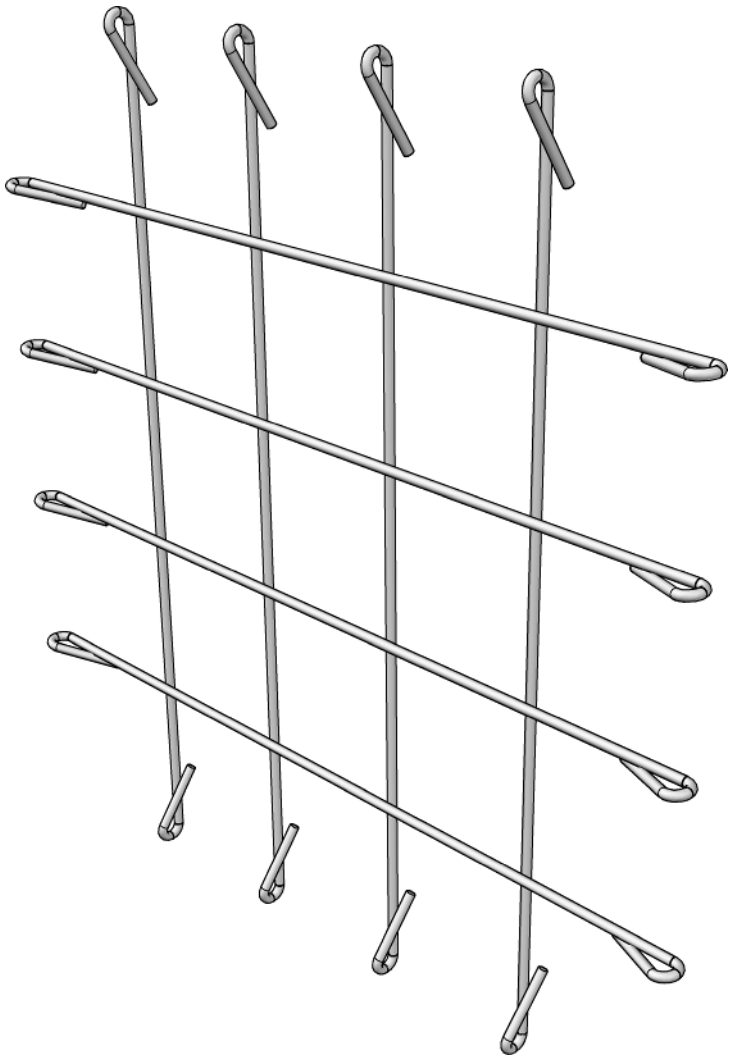
Figures 3 a) to 3 d) show various types of jointing systems:



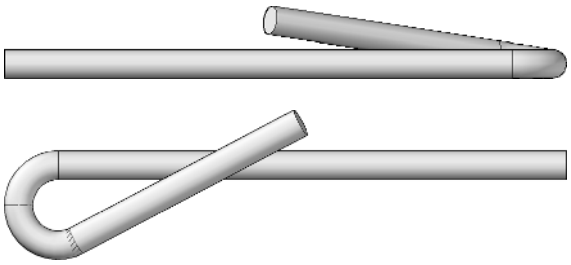
a)



b)

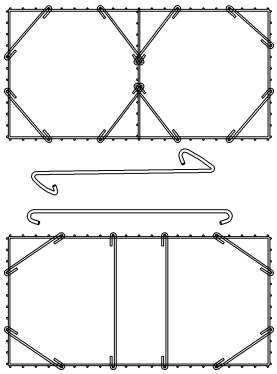


c)



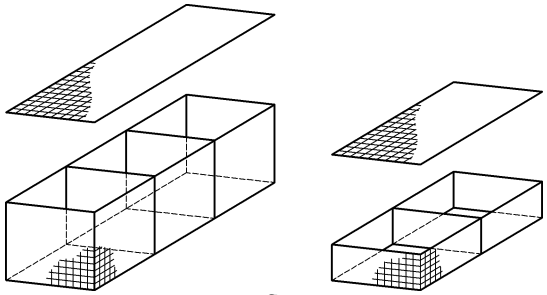
d)

Possible bracing tie layouts: Diagonally in the corners or across the gabion:



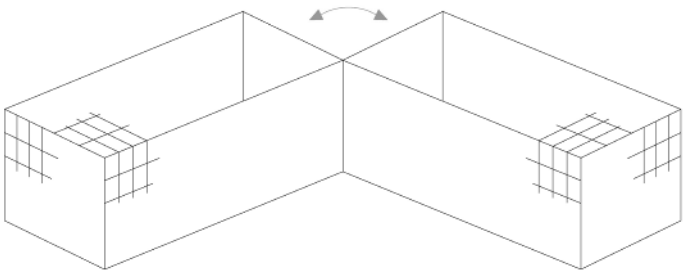
e)

The panel cut, the stacking or use of special panels (trapezoidal, circular, with rounded corners or special corners, etc.) allow obtaining a great variety of layouts:



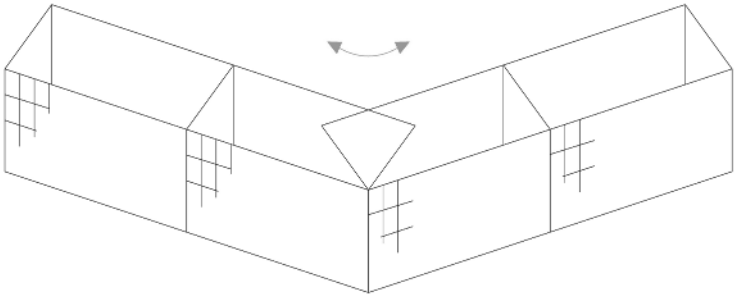
f)

The radius can be freely adjusted:



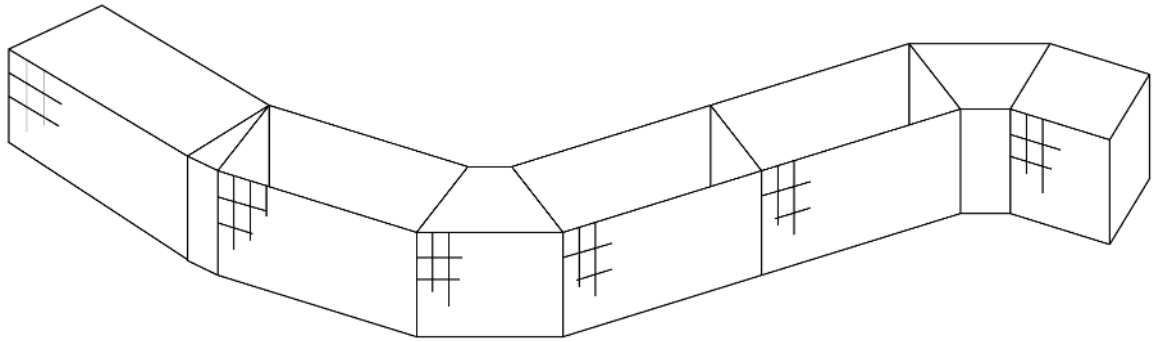
g)

The gabions can be fitted into one another:



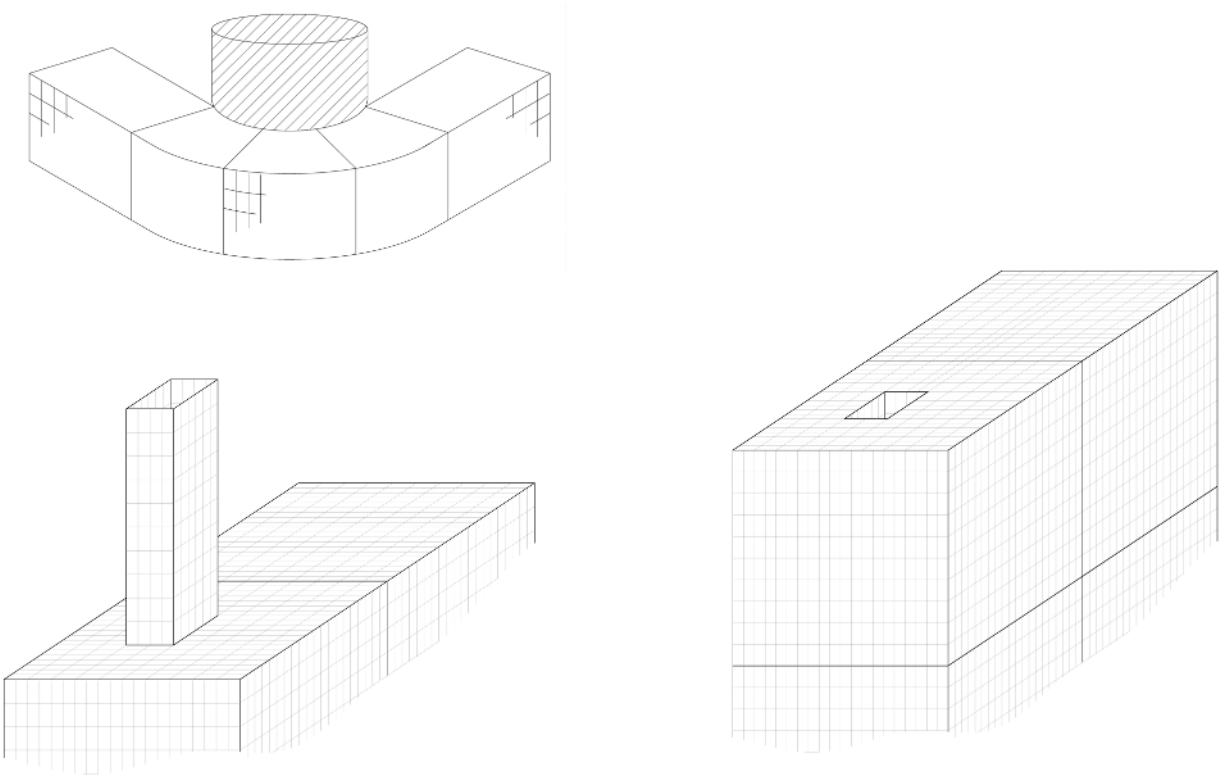
h)

Custom-made elements (trapezoidal panels, etc.) can be used:



i)

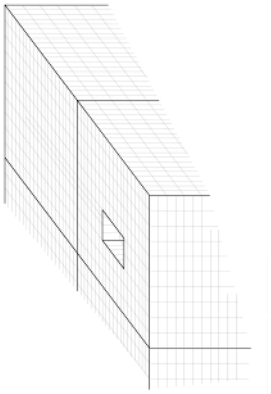
Special trapezoidal panels or rounded shapes for very small radius:



j)

Re-entrants for guardrail or fence fitting (above):

Re-entrants for letter boxes, lighting, etc. (below):



k)

Figure 3 — Examples illustrating the definitions for enclosed cellular structure

4 Classification

Welded wire mesh gabions can be classified according to the coating, as follows:

— Welded wire fabric, hot-dip galvanized according to EN ISO 1461 after manufacturing (welding, bending, etc.).

— Welded wire fabric made from wire, coated with zinc-aluminium alloy coated before welding into the fabric. Spirals, lacing wire, locking pins, c-rings and bracing ties are also produced from zinc-aluminium-alloy coated wire.

— Welded wire fabric, and lacing wire are produced from zinc coated wire and over coated with PVC. Spirals, locking pins and brace ties are produced from stainless steel wire or zinc coated wire and over coated with PVC.

— Welded wire fabric, spirals, lacing wire, locking pins and brace ties are produced from stainless steel wire.

5 Information to be supplied by the purchaser

The following information shall be supplied by the purchaser at the time of enquiry and order:

a) number of this European Standard;

b) quantity and type of gabion;

c) size of the units;

d) mesh size;

e) wire diameter;

f) stainless steel wire (see 6.2.2) or steel wire including metallic coating type (see 6.3);

g) description of the site environment level (see Table 1);

h) characteristics of the eventual PVC coating (see 6.4);

i) inspection documentation requirements.

6 Manufacture

6.1 General

The Quality Management System, supervising the internal manufacturer's procedures, should be certified according to EN ISO 9001 by an independent body.

6.2 Base metal

6.2.1 Low carbon steel for wire

If low carbon steel wires are used, the chemical composition shall be in accordance with EN ISO 16120-2.

6.2.2 Stainless steel for wire

For seaside applications, electro-polishing and passivation for panels and accessories are needed.

If stainless steel wires are used, the chemical composition shall be in accordance with EN 10088-1.

6.3 Metallic coatings

The metallic coating (zinc/aluminium alloy) shall be in accordance with EN 10218-2, EN 10244-1, EN 10244-2 and EN ISO 1461. For coating weights, see 7.4.

6.4 Requirements for PVC coating

The initial properties of the PVC coating on the wire and welded wire fabric shall fulfil the requirements of EN 10245-1 and EN 10245-2.

Table 1 — Description of environment of installation site, coating wire requirements

Site Environment level [a] **(in accordance with EN ISO 9223:2012, Table 1)**	**Plastic coating material**	**Coating** [e]	**Class** [b, c] **(EN 10244-2)**
Low Aggressive: (C2) Dry conditions Temperate zone, atmospheric environment with low pollution, e.g. rural areas, small towns (over 100 m above see level). Dry or cold zone, atmospheric environment with short time of wetness, e.g. deserts, sub-arctic areas	-	EN ISO 1461 [c]	-
	-	Zn95%/Al5% alloy	A
	-	Advanced metallic coatings [e]	A
Medium aggressive: (C3) Dry conditions Temperate zone, atmospheric environment with medium pollution or some effect of chlorides, e.g. urban areas, coastal areas with low deposition of chlorides, e.g. subtropical and tropical zone, atmosphere with low pollution	-	EN ISO 1461 [c]	-
	-	Zn95%/Al5% alloy	A
	-	Advanced metallic coatings [e]	A
	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy	A
	Polyvinyl chloride (PVC)	Advanced metallic coatings [e]	A
High aggressive: (C4) Wet conditions Temperate zone, atmospheric environment with high pollution or substantial effect of chlorides, e.g. polluted urban areas, industrial areas, coastal areas, without spray of salt water, exposure to strong	-	EN ISO 1461 [c]	-
	-	Zn95%/Al5% alloy	A
	-	Advanced metallic coatings [e]	A
	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy	A

Table 1 *(concluded)*

Site Environment level [a] **(in accordance with EN ISO 9223:2012 Table 1)**	**Plastic coating material**	**Coating** [e]	**Class** [b,c] **(EN 10244-2)**
effect of de-icing salts, e.g. Subtropical and tropical zone, atmosphere with medium pollution industrial areas, coastal areas, shelter positions at coastline	Polyvinyl chloride (PVC)	Advanced metallic coatings [e]	A
Very High aggressive: (C5) [d] Wet conditions Temperate and subtropical zone, atmospheric environment with very high pollution and/or important effect of chlorides, e.g. industrial areas, coastal areas, shelter positions at coastline	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy	A
	Polyvinyl chloride (PVC)	Advanced metallic coatings [e]	A
Extreme aggressive: (CX) [d] Subtropical and tropical zone (very high time of wetness), atmospheric environment with very high pollution SO_2 (higher than 250 µg/m^3) including accompanying and production ones and/or strong effect of chlorides, e.g. extreme industrial areas, coastal and off shore areas, occasionally contact with salt spray	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy	A
	Polyvinyl chloride (PVC)	Advanced metallic coatings [e]	A

[a] Gabion products immersed in water (saline and/or polluted water) and/or in contact with alkaline solutions, or gabions which are subject to abrasive conditions (sand storms, …) shall be metallic coated with plastic coating or shall be made from stainless steel wire.

[b] Accessories have the same coating as the mesh or better.

[c] Heavier coating weights than the minimum requirements are possible.

[d] For C5 and CX classes, for metallic coatings a specific agreement can be made between purchaser and supplier.

[e] There exist more advanced metallic coatings with a superior corrosion resistance. In terms of salt spray performance (EN ISO 9227), it means that the mesh samples shall not show more than 5 % of DBR (Dark Brown Rust) after 2 000 h exposure on the surface. When subjected to test in sulphur dioxide environment (EN ISO 6988), mesh samples shall not show more than 5 % of DBR (Dark Brown Rust) after 56 cycles of discontinuous test on the surface. Assumed working life values will, therefore, be improved depending upon the prevailing conditions.

7 Requirements

7.1 General

The single complete units shall be manufactured in the different sizes according to the customer requests and the producer capability.

The mesh opening sizes and their tolerances shall be as given in 7.3.

The wire properties shall be as shown in 7.4.

For structural applications, the doubling of lids and side panels is necessary (for engineered solutions a different agreement can be done at the design stage).

7.2 Gabion and gabion mattress sizes

The sizes are designated by means of *L* x *W* x *H.*

The permissible tolerance on *L*, *W* and *H* is +/- 35 mm.

Some typical standard sizes are shown in Table 2 below.

Table 2 — Nominal sizes of standard gabions and gabion mattresses

	Unit Length (*L*) in m	**Unit Width (*W*)** in m	**Unit Height (*H*)** in m
Welded Wire Mesh Gabion	1,00	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
	1,50	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
	2,00	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
	3,00	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
	4,00	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
	5,00	0,5 - 1,00 – 1,50	0,50 ; 0,70 or 1,00
Welded Wire Mesh Gabion Mattress	2,00	2,00	0,225 ; 0,25 ; 0,30 or 0,50
	3,00	2,00	0,225 ; 0,25 ; 0,30 or 0,50
	4,00	2,00	0,225 ; 0,25 ; 0,30 or 0,50
	5,00	2,00	0,225 ; 0,25 ; 0,30 or 0,50
	6,00	2,00	0,225 ; 0,25 ; 0,30 or 0,50

The actual value is a multiple of the mesh size. This table refers to the industry nominal standard unit sizes; non-standard unit sizes are available in dimensions of multiples of the mesh opening (e.g. for cladding).

7.3 Mesh sizes

Nominal dimension in mm for mesh sizes are:

— 50 x 50;

— 75 x 75;

— 100 x 50;

— 100 x 100.

Depending on the manufacturer practices mesh size can be a multiple of 25,4 mm or 25 mm.

Table 3 — Tolerances on mesh dimensions

Mesh dimensions mm	**Tolerance** mm
< 50	± 2,0
≥ 50 to < 200	± 3,0

Variations in the panel dimensions shall be a maximum of ± 3,0 mm per metre measured centre to centre of edge wires.

7.4 Wire properties of welded gabion products

Except for the lacing wire, the minimum diameter for metallic coated gabions and accessories shall be equal or more than 3 mm for gabions and 2,7 mm for mattresses. For PVC coatings, core wires 2,7 mm for gabions and 2,4 mm for mattresses.

Metallic coated or stainless steel lacing wire or the core wire of PVC coated lacing wire are minimum diameter 2,2 mm.

The selection of tensile strength should reflect the weld strength requirements for the structure. The minimum tensile strength should be higher than 500 MPa.

Wire diameter tolerance of zinc and zinc alloy coated wire shall be in accordance with EN 10218-2:2012, Table 1, class T1. For plastic coating material, tolerance on overall diameter of organic coating, minimum coating thickness and minimum concentricity, shall be in accordance with EN 10218-2:2012, Table 2.

7.5 Weld shear strength

The average shear strength of four welds selected at random from one panel shall not be less than 75 % of the breaking load of the wire (maximum force during tensile test) with no single weld below 50 %.

7.6 Ageing and corrosion resistance

7.6.1 Zn95Al5 class A or equivalent advanced metallic coatings

When subjected to test in a sulphur dioxide environment according to the procedures in EN ISO 6988 (0,2 dm^3 SO_2 per 2 dm^3 water) after 28 cycles of discontinuous test, or according to DIN 50018 (1 dm^3 SO_2 per 2 dm^3 water) after 16 cycles of discontinuous test, the mesh samples shall not show more than 5 % of DBR (Dark Brown Rust).

When subjected to the neutral salt spray test according to the procedures in EN ISO 9227 after a period of 1 000 h of exposure, the mesh samples shall not show more than 5 % of DBR.

7.6.2 Advanced metallic coatings class A

When subjected to test in a sulphur dioxide environment according to the procedures in EN ISO 6988 (0,2 dm^3 SO_2 per 2 dm^3 water) after 56 cycles of discontinuous test, or according to DIN 50018 (1 dm^3 SO_2 per 2 dm^3 water) after 32 cycles of discontinuous test, the mesh samples shall not show more than 5 % of DBR (Dark Brown Rust).

When subjected to the neutral salt spray test according to the procedures in EN ISO 9227 after a period of 2 000 h of exposure, the mesh samples shall not show more than 5 % of DBR.

7.6.3 PVC coated

The polymer mechanical characteristics (elongation and tensile strength) of the base compound after a UV-rays exposition of 4 000 h to Xenon Arc (EN ISO 4892-2) or 2 500 h QUV-A (ISO 4892-3 exposure mode 1) cannot change more than 25 % from the initial test results.

7.6.4 Hot dip galvanized products

Hot dip galvanized products shall be tested according to EN ISO 1461.

7.7 Lacing wire, spirals and rings

Lacing wire shall have a minimum wire diameter of 2,2 mm, having a tensile strength in the range of 350 N/mm^2 to 550 N/mm^2 and metallic coated in accordance with 6.3. If an additional extruded organic polymer powder coating is required, it shall be in accordance with 6.4. In the case of stainless steel lacing wire, this shall be in accordance with the designers' requirements.

Gabion rings shall be made with 3,0 mm wire with a minimum zinc coating or zinc-aluminium alloy coating weight of 255 g/m^2. The minimum tensile strength of the wire of the rings shall be 1 720 MPa for zinc and zinc-aluminium alloy coated wire and 1 550 MPa for stainless steel wire. The pull-apart strength of the ring shall be minimum 2,0 kN.

Coating of all connecting elements (lacing wire, spirals and rings), shall be in accordance with the coating of the welded mesh of gabion or mattresses.

8 Sampling and testing

The manufacturer is responsible for the control of product quality by the application of statistical methods of sampling and analysis of results.

9 Inspection and documentation

On customer request, the supply of gabion products shall be provided with a Certificate of Origin, printed only in original, containing the following data:

a) number of this European Standard;

b) product description (type and product name);

c) geometrical sizes;

d) manufacturer or supplier name;

e) client name and address (or job site destination);

f) quantity of product supplied;

g) method of test (see Figure 4):

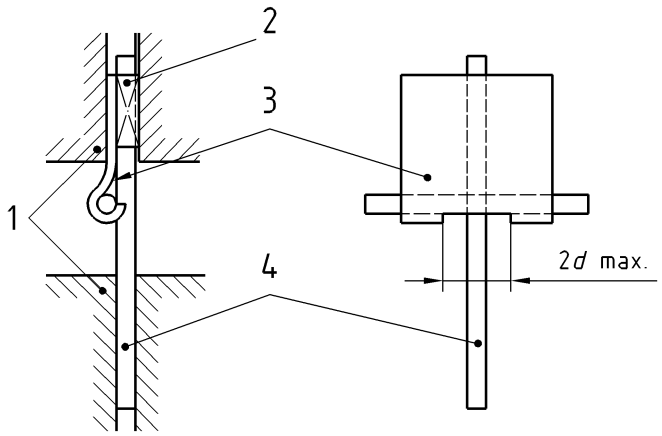
   1) Zinc or zinc alloy coated wire:

Zinc or zinc alloy coatings shall be assessed in accordance with EN 10244-1 and EN 10244-2 or EN ISO 1461.

2) PVC coated wire:

Organic coating shall be assessed in accordance with EN 10245-1 and EN 10245-2.

3) Weld shear strength.



Key

1 tensile test machine grips
2 packing
3 hook attachment
4 test piece
d wire diameter

Figure 4 — Test method

10 Packaging

Gabions and gabion mattresses shall be supplied in the collapsed state, folded, bundled, strapped together and palletized. Each pallet shall be labelled and identified with, as a minimum, the dimensions of the product.

Annex A
(informative)

Description of environment of installation site, coating wire requirements

Table A.1 – Description of environment of installation site, coating wire requirements *(1 of 3)*

Site Environment level [a] **(in accordance with EN ISO 9223:2012, Table 1)**	**Plastic coating material**	**Coating**	**Class** [b, c] **(EN 10244-2)**	**Assumed working life of the product (year)** [f]
Low Aggressive: (C2) Dry conditions Temperate zone, atmospheric environment with low pollution, e.g.: rural areas, small towns (over 100 m above see level). Dry or cold zone, atmospheric environment with short time of wetness, e.g. deserts, sub-arctic areas	-	EN ISO 1461 [c]	-	See EN ISO 14713-1
	-	Zn95%/Al5% alloy [e]	A	> 50 [e]
Medium aggressive: (C3) Dry conditions Temperate zone, atmospheric environment with medium pollution or some effect of chlorides, e.g. urban areas, coastal areas with low deposition of chlorides, e.g. subtropical and tropical zone, atmosphere with low pollution	-	EN ISO 1461 [c]	-	See EN ISO 14713-1
	-	Zn95%/Al5% alloy [e]	A	25 [e]
	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy [e]	A	120 [e]
High aggressive: (C4) Wet conditions Temperate zone, atmospheric environment with high pollution or substantial effect of chlorides, e.g. polluted urban areas, industrial areas, coastal areas, without spray of salt water, exposure to strong	-	EN ISO 1461 [c]	-	See EN ISO 14713-1
	-	Zn95%/Al5% alloy [e]	A	10 [e]

Table A.1 *(2 of 3)*

Site Environment level [a] **(in accordance with EN ISO 9223:2012, Table 1)**	**Plastic coating material**	**Coating** [e]	**Class** [b, c] **(EN 10244-2)**	**Assumed working life of the product (year)** [f]
effect of de-icing salts e.g. subtropical and tropical zone, atmosphere with medium pollution industrial areas, coastal areas, shelter positions at coastline	Polyvinyl chloride (PVC) [a]	Zn95%/Al5% alloy [a]	A [a]	120 [a]
Very High aggressive: (C5) [d] Wet conditions Temperate and subtropical zone, atmospheric environment with very high pollution and/or important effect of chlorides, e.g. industrial areas, coastal areas, shelter positions at coastline	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy [e]	A	120 [e]
Extreme aggressive: (CX) [d] Subtropical and tropical zone (very high time of wetness), atmospheric environment with very high pollution SO_2 (higher than 250 µg/m^3) including accompanying and production ones and/or strong effect of chlorides, e.g. extreme industrial areas, coastal and off shore areas, occasionally contact with salt spray	Polyvinyl chloride (PVC)	Zn95%/Al5% alloy [e]	A	> 50 [e]

Table A.1 *(3 of 3)*

As defined in Guidance Paper F (concerning the Construction Products Directive 89/106/EEC) paragraph 3.2 and Table 2 “Illustrative assumed working lives of work and construction products". **Working life (product)** - the period of time during which the performance of a product will be maintained at a level that enables a properly designed and executed works to fulfil the Essential Requirements (i.e. the essential characteristics of a product meet or exceed minimum acceptable values, without incurring major costs for repair or replacement).The working life of a product depends upon its inherent durability and normal installation and maintenance. A clear distinction has to be made between the assumed economically reasonable working life for a product (also called: design working life), which underlies the assessment of durability in Technical Specifications, and the actual working life of a product in a works. The latter depends on many factors beyond the control of the producer, such as design, location of use (exposure), installation, use and maintenance. **The assumed working life can thus not be interpreted as being a guarantee given by the producer.** Technical Specification writers will have to take a view about the “normal” working life of the products that they deal with. The assumed working life of a product should take account of the assumed working life of the works, the ease and cost of repair or replacement of the product, maintenance requirements and exposure conditions.
[a] Gabion products immersed in water (saline and/or polluted water) and/or in contact with alkaline solutions, or gabions which are subject to abrasive conditions (sand storms, …) shall be metallic coated with plastic coated or shall be made from stainless steel wire. [b] Accessories have the same coating as the mesh or better. [c] Heavier coating weights than the minimum requirements are possible. [d] For C5 and CX classes, for metallic coatings a specific agreement can be made between purchaser and supplier. [e] There exist more advanced metallic coatings with a superior corrosion resistance and expected higher assumed working life which should be proved. In terms of salt spray performance (EN ISO 9227), it means that the mesh samples shall not show more than 5 % of DBR (Dark Brown Rust) after 2 000 h exposure on the surface. When subjected to test in sulphur dioxide environment (EN ISO 6988), mesh samples shall not show more than 5 % of DBR (Dark Brown Rust) after 56 cycles of discontinuous test on the surface. Assumed working life values will be therefore improved depending upon the prevailing conditions. [f] The life of zinc or zinc alloy coatings is directly proportional to its coating weight. When higher coating weights are used, the assumed working life can be adjusted accordingly.

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