

GABIONS GALFAN & POLYMER COATED

Gabions are baskets made of double twisted steel woven wire mesh, with mechanical characteristics higher than the ones suggested from EN 10223-3 (Figs. 1, 2). Gabions are filled with stones at the project site to form flexible, permeable, monolithic structures such as retaining walls, channel linings, and weirs for erosion control projects.

The steel wire used in the manufacture of the gabion is heavily galvanized with Galfan, a Zn-5%Al-MM (mischmetal) alloy. A PVC coating is then applied to provide added protection for use in polluted environments where soils or water are acidic: in salt or fresh water, or wherever the risk of corrosion is present. The PVC coating has a nominal thickness of 0.50 mm. The standard specifications of mesh-wire are shown in Table 2.

The gabion is divided into cells by means of diaphragms positioned at approximately 1m centers (Fig.1). In order to reinforce the structure, all mesh panel edges are selvaged with a wire having a greater diameter (Table 3).

Dimensions and sizes of Galfan + PVC coated gabions are shown in Table 1.

Wire

All tests on wire must be performed prior to manufacturing the mesh.

- Tensile strength:** the wire used for the manufacture of gabions shall have a tensile strength between 350-550N/mm² exceeding, in order to increase the tensile resistance of the finished products, what is suggested from EN 10223-3. Wire tolerances (Table 3) are in accordance with EN 10218 (Class T1).
- Elongation:** Elongation shall not be less than 9%, exceeding, in order to increase the tensile resistance of the finished products, what is suggested from EN 10223-3. Test must be carried out on a sample at least 25 cm long.
- Galfan coating:** minimum quantities of Galfan shown at Table 3 meet the requirements of EN 10244-2 (Table 2 and Class A).
- Adhesion of Galfan:** the adhesion of the Galfan coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers.

P.V.C. (Polyvinyl Chloride) Coating

The technical characteristics and the resistance of the PVC to ageing meet the relevant standards. The main values for the PVC material, according to EN 10245-2, are as follows:

Colour: grey-RAL 7037, according to ASTM D1482-57T;

Specific gravity: 1.30-1.35 kg/dm³ in accordance with ASTM D792 Table 1;

Hardness: between 50 and 60 Shore D, according to ASTM D 2240;

Tensile strength: not less than 20.6 MPa, according to ASTM D412-92;

Elongation at break: not less than 200%, in accordance with ASTM D412-92;

Weight loss: less than 5%, after 24 hrs at 105°C, test method ASTM D2287-92;

Residual ashes: less than 2%, according to ASTM D2124-62T;

Abrasion resistance: loss in volume shall be less than 0.30 cm³, according to ASTM D1242-92, test method A.

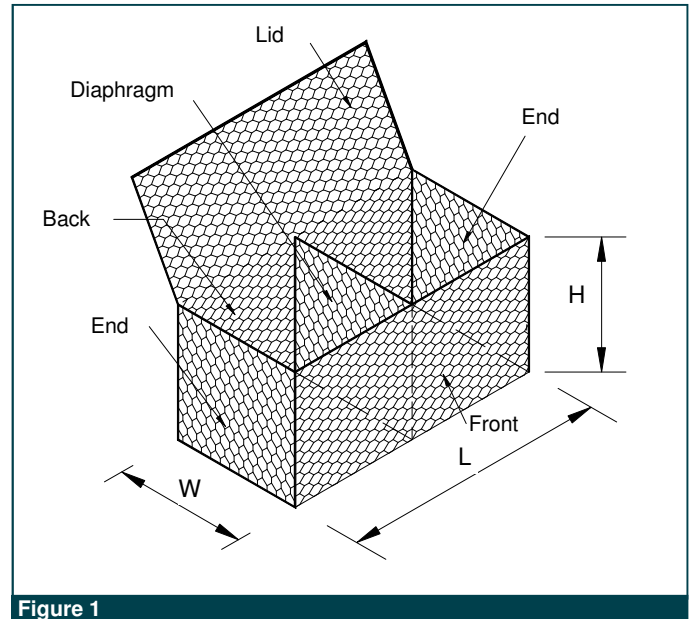


Figure 1

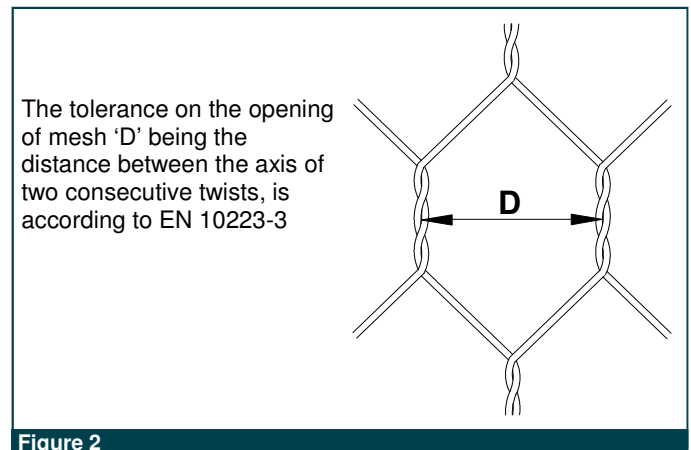


Figure 2

The accelerated ageing tests are:

Salt spray test: test period 1,500 hrs, test method ASTM B117-94;

Exposure to UV rays: test period 2,000 hours at 63°C, test method ASTM D1499-92a and ASTM G23-93 apparatus Type E;

Exposure to high temperatures: 24 hrs at 105°C, according to ASTM D1203 and ASTM D2287;

Brittleness temperature: Cold-bend less than -30°C test method BS 2782-104A; Cold-flex less than +15°C, test method BS 2782-151A.

The properties after ageing tests shall be as follows:

Appearance of coating: no cracking, stripping or air bubbles, and no appreciable variation in color;

Specific Gravity: variations shall not exceed 6%;

Hardness: variations shall not exceed 10%;

Tensile strength and elongation: var. shall not exceed 25%;

Abrasion resistance: variations shall not exceed 10%;

Brittleness temperature: Cold-bend shall not exceed -20°C. Cold-flex shall not exceed +18°C.

1. Table of sizes for gabions

| L=Length (m) | W=Width (m) | H=Height (m) | # of cells |
|--------------|-------------|--------------|------------|
| 2 | 1 | 0.5 | 2 |
| 3 | 1 | 0.5 | 3 |
| 4 | 1 | 0.5 | 4 |
| 1.5 | 1 | 1 | 1 |
| 2 | 1 | 1 | 2 |
| 3 | 1 | 1 | 3 |
| 4 | 1 | 1 | 4 |

All sizes and dimensions are nominal.

(Table 1) Tolerances of $\pm 5\%$ of the width, height, and length of the gabions shall be permitted.

2. Standard Mesh-Wire

| Type | D (mm) | Tolerance | Internal Wire Dia (mm) | External Wire Dia (mm) |
|------|--------|-----------|------------------------|------------------------|
| 8x10 | 80 | +16%/-4% | 2.70 | 3.70 |

3. Standard wire diameters

| | Mesh Wire | Selvedge | Lacing Wire |
|---------------------|--------------------------|-----------------|-----------------|
| PVC Mesh Diameter | \emptyset mm | Int.2.7/Ext.3.7 | Int.2.2/Ext.3.2 |
| Wire Tolerance | (\pm) \emptyset mm | 0.06 | 0.06 |
| Min. Q.ty of Galvan | gr/m ² | 245 | 230 |

Lacing Operations

Lacing operations can be made by using the tools shown in Fig.5. Galvan coated steel rings having the following specification can be used instead of lacing wire (Figs. 3, 4):

- diameter: 3.00 mm
- tensile strength: 170 kg/mm²

Spacing of the rings must not exceed 200 mm (Fig.3)

Quantity Request

When requesting a quote, please specify:

- size of units (length x width x height, see Fig.1),
- type of mesh,
- type of coating

EXAMPLE: No. 100 gabions 2x1x1m - Mesh type 8x10 - Wire diam. 2.7/3.7 mm - Galvan + PVC coated

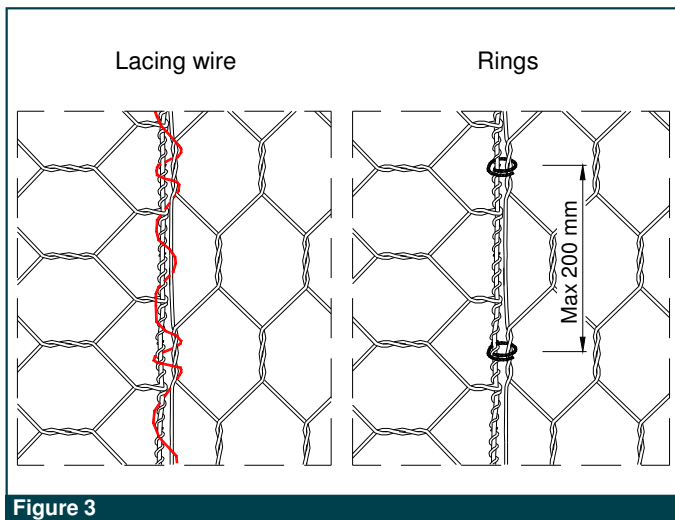


Figure 3

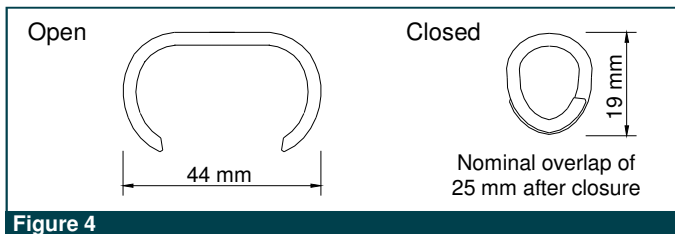


Figure 4

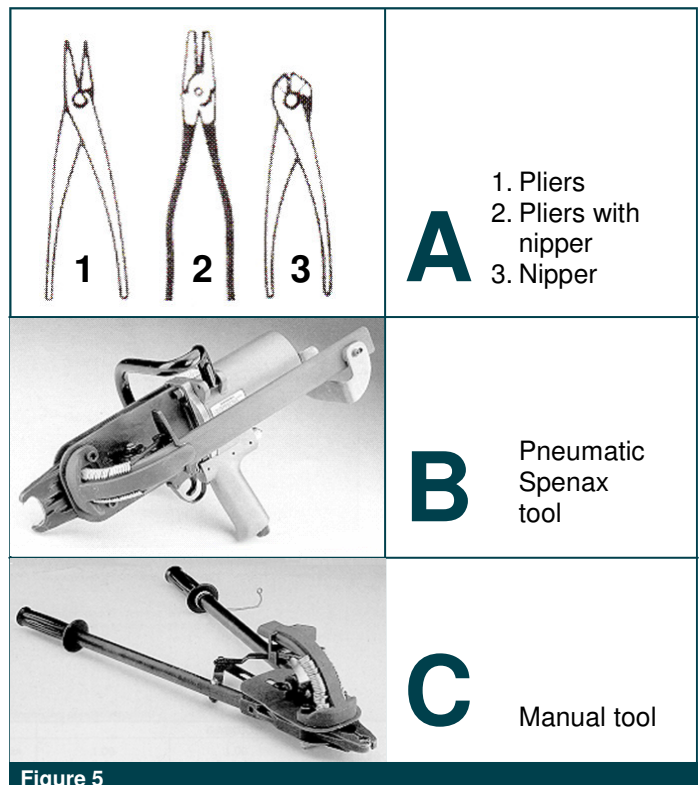


Figure 5

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