

### RENO MATTRESS GALMAC & PVC COATED

Reno mattresses are units manufactured from double twisted hexagonal woven steel wire mesh 6x8 type as per EN 10223-3:2013. The management and production system is certified in compliance with ISO 9001.

Reno mattresses are filled with stones at the project site to form flexible, permeable, monolithic structures such as river bank protections and channel linings for erosion control projects. Reno mattresses are divided into uniformly portioned cells by internal diaphragms. 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 Galmac and polymer coated Reno mattresses are shown in Table 1.

#### Steel Wire

The nominal tensile strength of the wire mesh shall be as per Table 2; test done as per EN 10223-3:2013.

The punch strength of the wire mesh shall be as per table 2; test done as per UNI 11437.

When the mesh is tested at 50% of the nominal tensile strength in accordance to EN 10223-3:2013, the wires will not show cracks in the organic coating within the double twists region.

#### Wire

The steel wire used in the manufacture of the unit is galvanized with Galmac, a Zn-5%Al alloy.

A polymer coating with a nominal thickness of 0.50 mm is then applied to provide added protection for use in hydraulic works, polluted environments or wherever the risk of corrosion is present. The standard specifications of mesh-wire are shown in Tables 2 and 3. 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 350-550 N/mm<sup>2</sup> as per EN 10223-3:2013. Wire tolerances (Table 4) are in accordance with EN 10218 (Class T1).
- Elongation:** Elongation at fracture shall not be less than 8%, on a gauge length of 250 mm as per EN 10223-3: 2013.
- Galmac coating:** minimum quantities of Galmac (Table 4) meet the requirements of EN 10244-2 (Table 2 - Class A).
- Adhesion of Galmac:** the adhesion of the Galmac 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, according to EN 10244.
- Outwearing accelerated aging test:** when subjected to test in sulphur dioxide environment (EN ISO 6988) after 28 cycles of discontinuous test the mesh shall not show more than 5% of DBR (Dark Brown Rust).

#### 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 are as follows:

**Specific gravity:** 1.30-1.35 kg/dm<sup>3</sup> in accordance with ASTM D792 Table 1;

**Hardness:** between 50 and 60 Shore D, according to ASTM D 2240 -91;

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

**Modulus of elasticity:** not less than 18.6 MPa, in accordance with ASTM D412-92;

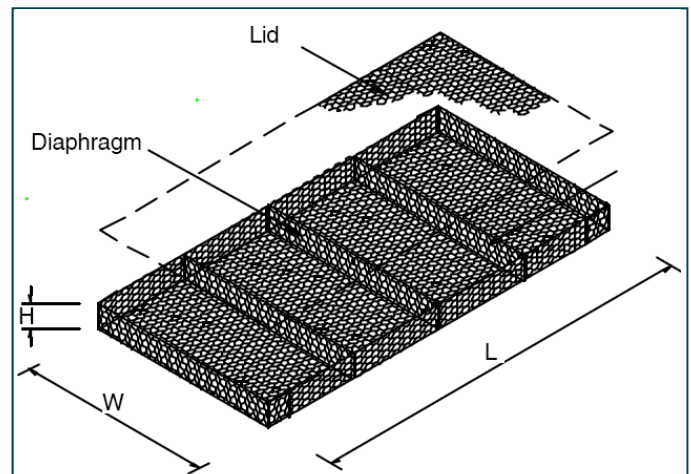


Figure 1

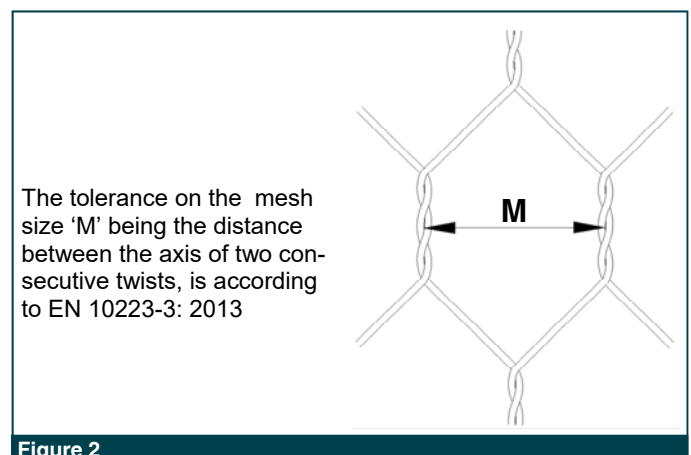


Figure 2

The tolerance on the mesh size 'M' being the distance between the axis of two consecutive twists, is according to EN 10223-3: 2013

**Abrasion resistance:** the percentage of the weight loss shall be less than 12%, according to ASTM D1242-92.

**Creeping corrosion:** max. penetration of corrosion of the wire from a square cut end shall be 1 in. (25 mm) when the specimen has been immersed for 2,000 hours in a 5% solution HCl (hydrochloric acid 12 Be).

The accelerated ageing tests are:

**Salt spray test:** test period 3,000 hours, test method ASTM B117-94;

**Exposure to UV rays:** test period 3,000 hours at 145°F (63°C), test method ASTM D1499-92a and ASTM G23-93 apparatus Type E;

**Brittleness temperature:** no higher than 15°F (-9°C), or lower temperature when specified by the purchaser, when tested in accordance with ASTM D746.

The properties after ageing tests shall be as follows:

**Appearance of coated mesh:** 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:** variations shall not exceed 25%;

**Modulus of elasticity:** variations shall not exceed 25%;

**Abrasion resistance:** variations shall not exceed 10%

**Table 1: Sizes for Reno mattresses**

L=Length (m)	W=Width (m)	H=Height (m)	Mesh type
6	2	0.17	6 x 8
6	2	0.23	6 x 8
6	2	0.30	6 x 8

All sizes and dimensions are nominal. Tolerances of  $\pm 5\%$  of the length, width and  $\pm 2.5$  cm of the height shall be permitted (EN 10223-3:2013).

### Quantity Request

When requesting a quote, please specify:

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

EXAMPLE: No. 100 Reno mattress 6x2x0.23m - Mesh type 6x8 - Galmac + Polymer coated

### Lacing Operations

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

Stainless steel rings for PVC coated products

- diameter: 3.00mm,
- tensile strength: 1530-1745 MPa,
- pull-apart strength >2.0kN

Spacing of the rings must not exceed 150 mm (Fig.3)

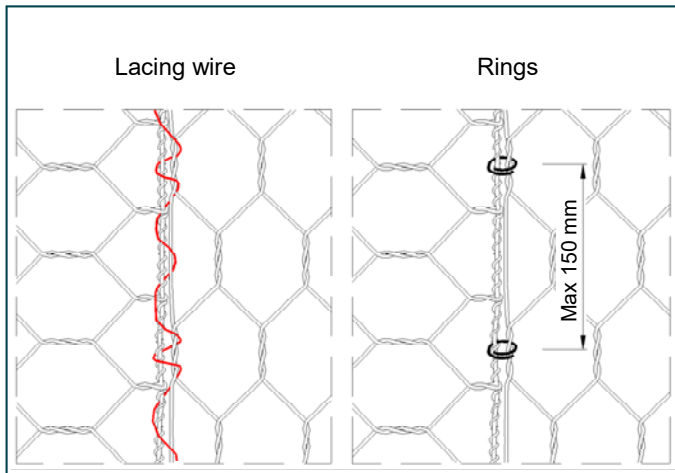


Figure 3

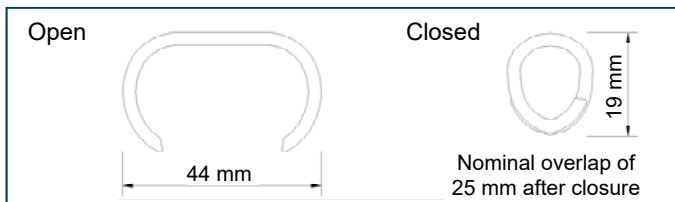


Figure 4

**Table 2: Standard Mesh-Wire**

Type	M (mm)	Tolerance (mm)	Wire Diameter int/ext (mm)	Mesh Tensile Strength (kN/m)	Punch Strength (kN)
6x8	60	-0/+8	2.0/3.0	35	20

**Table 3: Standard wire diameters**

	Mesh Wire	Selvedge Wire	Lacing Wire
6x8 Mesh Type	$\phi$ mm	2.0	2.7

**Table 4: Wire tolerances and coatings**

	Mesh Wire	Selvedge Wire	Lacing Wire
Wire Tolerance ( $\pm$ ) $\phi$ mm	0.06	0.06	0.06
Min. Quantity of Galmac $gr/m^2$	220	245	230

	<p><b>A</b></p> <ol style="list-style-type: none"> <li>1. Pliers</li> <li>2. Pliers with nipper</li> <li>3. Nipper</li> </ol>
	<p><b>B</b></p> <p>Pneumatic Spenax tool</p>
<p>Figure 5</p>	

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