

## RENO<sup>®</sup> MATTRESS (CASTORO) ZINC & POLYMER COATED

Reno<sup>®</sup> mattresses type Castoro are units manufactured from double twisted hexagonal woven steel wire mesh 6x8 type made of Zinc and polymeric coated wire. They are produced in compliance with SANS 1580 and EN 10223-3.

The management and production system is certified in compliance with ISO 9001, ISO 14001 (related to the environmental management system) and ISO 18001 (Occupational health and safety).

The base, diaphragms, front, end and sides of the Castoro are manufactured from one continuous panel of mesh. The base is folded onto itself at 1.0m intervals to form double side diaphragms automatically secured with spirals, for a much stiffer unit, able to withstand steeper slopes and retain the rock under high water flow.

Reno<sup>®</sup> mattresses type Castoro are filled with stones at the project site to form flexible, permeable, monolithic structures such as river bank protection and channel linings for erosion control projects. 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 Zinc and polymeric coated Reno<sup>®</sup> Mattress are shown in Table 1.

### Steel wire mesh

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

When the mesh is tested at 50% of the nominal tensile strength in accordance with EN 10223-3, the wire will not show cracks in the organic coating within the double twisted region.

### Wire

The steel wire used in the manufacture of Reno<sup>®</sup> Mattresses is heavily Zinc coated. 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 to manufacture Reno<sup>®</sup> mattresses has a tensile strength between 350-575 N/mm<sup>2</sup> in accordance with SANS 675. Wire tolerances are shown in Table 3 as per EN 10218 (Class T1).
- Elongation:** Elongation at fracture not less than 8%, as per EN 10223-3.
- Zinc coating:** minimum quantities of zinc shown in Table 3 meet the requirements of SANS 1580.
- Adhesion of zinc:** the adhesion of the zinc coating to the wire is in accordance with SANS 10244-2.
- Outwearing accelerated aging test** when subjected to test in sulphur dioxide environment (ISO 6988) after 28 cycles of discontinuous test the mesh shall not show more than 5% of DBR (Dark Brown Rust).

### Polymer coating

The technical characteristics and the ageing resistance of the polymer coating comply with EN 10245-1.

**Colour:** Grey.

**Resistance to UV radiation:** the tensile strength and elongation at break of the base compound after 2500 hours of exposure to UV-rays (ISO 4892-2) cannot change more than 25% from the initial test results.

**Chemical resistance:** the polymer shall resist the chemical agents in concentrations that are representative of soil and water normally found in civil works.

**Outwearing accelerated aging test in salt spray:** when the polymer coated wire mesh is subjected to the neutral salt spray test (ISO 9227) after 6000 hours of exposure the mesh does not show more than 5% of DBR (Dark Brown Rust).

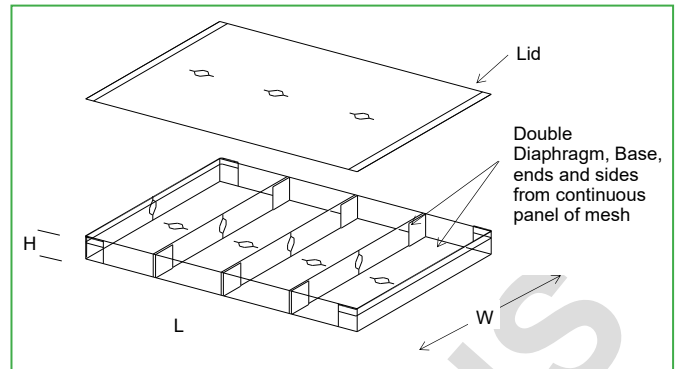
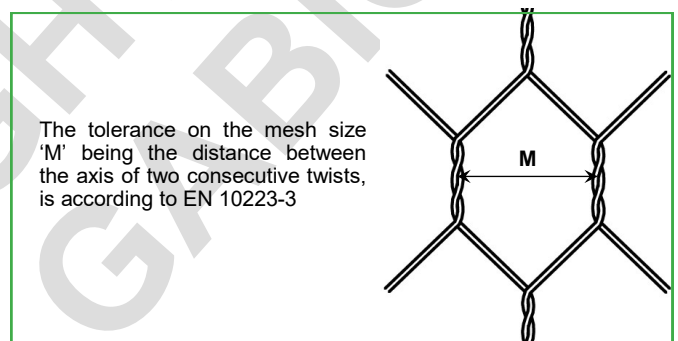


Figure 1



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

Figure 2

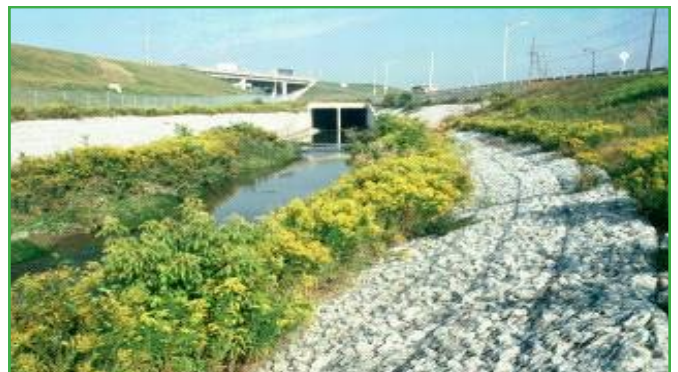


Figure 3: Reno<sup>®</sup> Mattress Castoro Zinc and Polymer coated

**Table 1: Sizes of Reno® Mattresses (type Castoro)**

Length (m)	Width (m)	Height (m)
2, 3, 4	2	0.17, 0.23, 0.30
6	2, 2.5	0.17, 0.23, 0.30

All sizes and dimensions are nominal. Tolerances in the length and width of  $\pm 5\%$ , height of  $\pm 25\text{mm}$  shall be permitted.

**Table 2: Standard mesh-wire**

Type	M (mm)	Tolerance (mm)	Wire diameter (mm)	Mesh Tensile Strength (KN/m)
6x8	60	-0 / +8	2.20 / 3.20	37

**Table 3: Standard wire diameter**

		Mesh wire	Selvedge wire	Lacing wire
Wire diameter	$\varnothing$ mm	2.2	2.7	2.2
Wire diameter tolerance	( $\pm$ ) $\varnothing$ mm	0.06	0.06	0.06
Minimum Zinc coating	g/m <sup>2</sup>	240	275	240

### Lacing Operations

Binding wire has a wire diameter of 2.2mm diameter and should be purchased in the same specification as the double twisted mesh. See lacing spacing in figure 5. Sold in 25kg rolls (6% of the unit weight is recommended for lacing and binding of units).

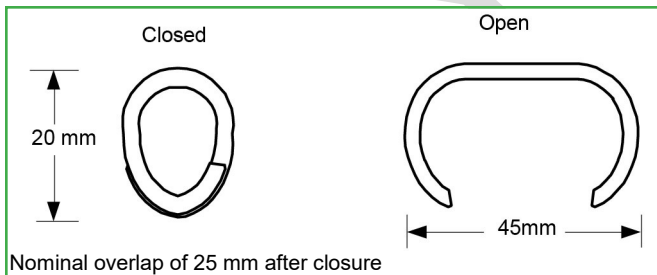
Alternatively, Galvan (Zn 95Al5) coated steel rings (see figure 4) having the following specification can be used instead of lacing wire.

Diameter: 3.00 mm;

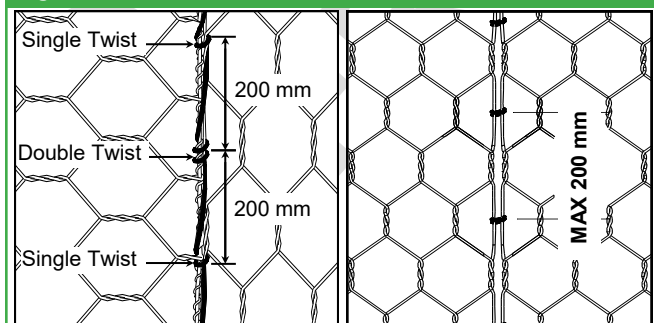
Tensile strength: > 1720 Mpa;

Pull-apart strength > 2.0 kN.

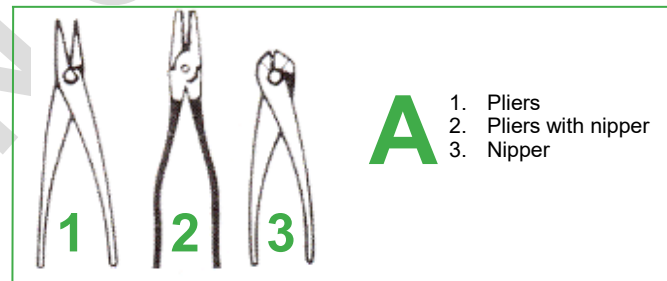
Spacing of the rings must not exceed 200 mm (Fig.5)



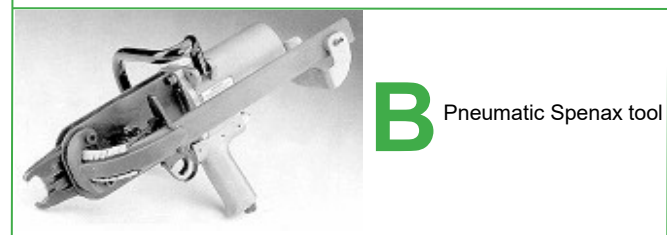
**Figure 4**



**Figure 5: Lacing wire and Rings**



- A**
1. Pliers
  2. Pliers with nipper
  3. Nipper



- B** Pneumatic Spenax tool



- C** Manual tool

**Figure 6**