RENO® MATTRESS (TYPE CASTORO)
POLIMAC COATED

Reno® mattresses type Castoro are units manufactured from double twisted hexagonal woven steel wire mesh 6x8 type, made of Galfan (Zn 95Al5 alloy) and Polimac® coated steel wire, they are produced in compliance EN 10223-3.
The management and production system is certified in compliance with ISO 9001, ISO 14001:2015 (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® 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 selvedged with a wire having a greater diameter (Table 3). Dimensions and sizes of Galfan (Zn 95Al5 alloy) and Polimac® coated Reno® mattresses are shown in Table 1.

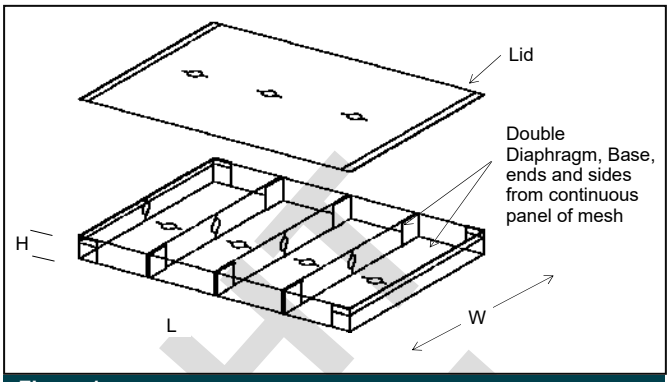


Figure 1

Steel wire mesh
The nominal tensile strength of the wire mesh is as per Table 2. Tests 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 the unit is galvanized with Galfan, a Zn 95Al5 alloy. A Polimac® 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.

1. **Tensile strength:** the wire used to manufacture Reno® Mattresses has a tensile strength between 350-575 N/mm^2 in accordance with SANS 675. Wire tolerances are shown in Table 3 as per EN 10218 (Class T1).
2. **Elongation:** Elongation at fracture not less than 8%, as per EN 10223-3.
3. **Galfan (Zn 95Al5) coating**: minimum quantities of Galfan **(**Zn 95Al5**)** shown in Table 3 meet the requirements of SANS 10244-2 (Class A).
4. **Adhesion of Galfan (Zn 95Al5):** the adhesion of the Galfan (Zn 95Al5) coating to the wire is in accordance with SANS 10244-2.
5. **Outwearing accelerated aging test** when subjected to test in sulphur dioxide environment (1S0 6988) after 28 cycles of discontinuous test the mesh shall not show more than 5% of DBR (Dark Brown Rust).

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

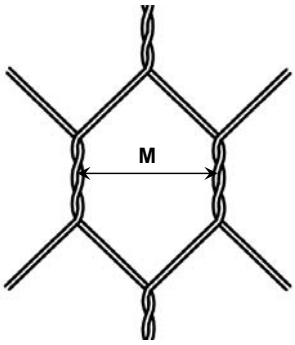



Figure 3: Reno® mattress Castoro Polimac coated

Polimac® 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 QUV-A (ISO 4892-3 mode 1) do not change more than 25% from the initial test results.
Chemical resistance: PoliMac® resists chemical agents in concentrations that are representative of soil and water normally found in civil and mining works.
Outwearing accelerated ageing test in salt spray: when PoliMac® 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).
Resistance to abrasion: PoliMac® coating does not expose metal wire when tested in accordance with procedure described in par. 4.1.2.1 of EN 60229:2008, after 100,000 cycles with a vertical force of the steel angle of 20N.

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

Length (m)	Width (m)	Height (m)
6	2	0.17
6	2	0.23
6	2	0.30

All sizes and dimensions are nominal. Tolerances in the length and width of ±5% , height of ± 25mm 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 diameters

		Mesh Wire	Selvedge wire	Lacing wire
Wire diameter	mm	2.2	2.7	2.2
Wire diameter tolerance	(±) mm	0.06	0.07	0.06
Minimum Galfan (Zn 95Al5) quantity	g/m^2	230	245	230

Lacing Operations

Lacing operations can be made by using the tools shown in Fig.6. Stainless steel (INOX) coated steel rings having the following specification can be used instead of lacing wire (Figs. 4, 5):

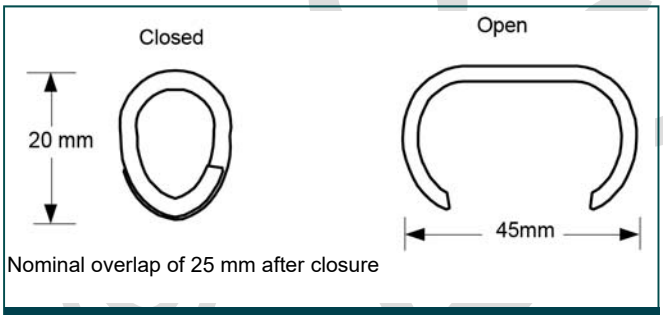
- Steel type: AISI302 - AISI 304 - AISI 316
- Diameter: 3.00 mm
- Tensile strength: > 1550 - 1745 MPa
- Pull-apart strength > 2.0 kN

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

Quantity Request

When requesting a quotation, please specify:

Item	Description	Unit
	Mattress with double diaphragms from continuous panel of mesh from the base (Length, Width, Height - Mesh Type 6x8, wire 2.2mm) - Zn 95Al5 + Polimac coated	Cubic metre (m^3)



Nominal overlap of 25 mm after closure

Figure 4

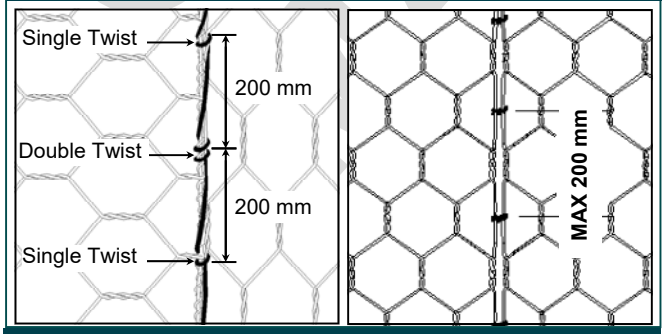


Figure 5: Lacing wire and Rings

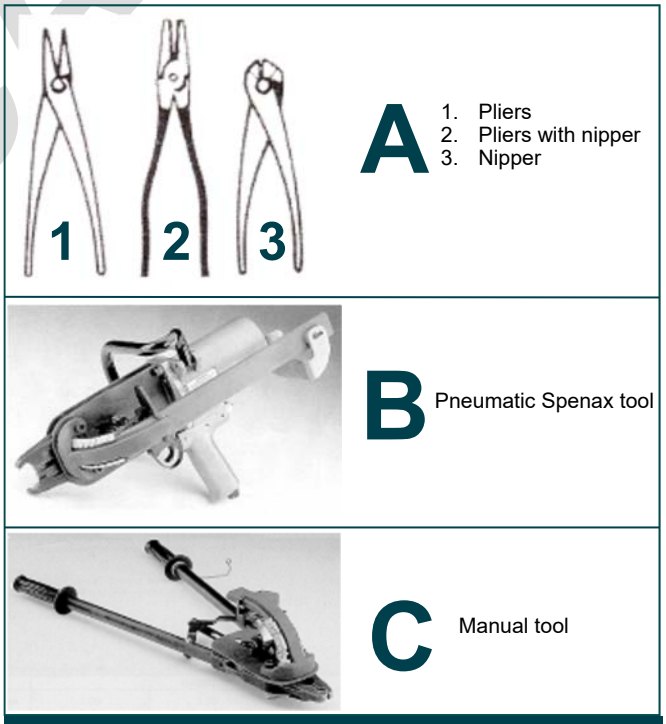


Figure 6

Maccaferri SA (Pty) Ltd t/a Maccaferri Africa

Head Office Durban
Branches: Cape Town
East London
Johannesburg
Tongaat (Factory)

P O Box 815
New Germany
3620

National Tel: 087 742 2710
International Tel: + 27 31 705 0500
Fax No: 087 742 2734
www.maccaferri.com/za

Engineering a Better Solution