

General

Mattresses (See fig.I) shall be made of hexagonal double-twisted mild steel wire mesh. For tolerances, see Table I.

Mattresses shall be supplied in various lengths, widths and heights.

The tolerances of mattress' dimensions are $\pm 3\%$ in length, $\pm 3\%$ in width and $\pm 2.5\text{cm}$ in height acc.to related standards. In order to strengthen the mattresses, all the edges of the structure selvedged with a wire of greater diameter. (See fig.II)

Usually the mattresses having bigger length than 2meter is divided into compartments by panels (called diaphragm)positioned per 1(one) meter.

If diaphragms not requested, it should be clearly stated by client. The mesh used in mattresses strictly conforms to EN10223-3 and ASTM A975-97.

Mild Steel Wire

All the wires used in gabion mattresses and lacing wire have the tensile strength of $38\text{-}48\text{kg/mm}^2$ ($54,000\text{-}70,000\text{psi}$) acc.to BS1052/80 and ASTM A641-97. (The figures above are of wire prior to manufacturing mesh)

The tolerances on diameter of zinc coated wire in Table II.

The elongation at break is min. 12% and test to be carried out on a sample of minimum 30cm (12 in.) long, before manufacturing the mesh. (In acc.with ASTM A370-92)

Galvanisation strictly conforms to ASTM A641-97 Class III Soft Temper Coating. Zinc adherence has to be such that when the wire is wrapped around a cylindrical mandrel having 4 times the diameter of the wire, the zinc shall not flake or crack to such an extent that any flake or crack can be removed by simply rubbing with bare fingers.

Advantages of Mattresses

- 1. Flexible:** Double-twisted hexagonal steel wire mesh structure tolerates against huge forces without breaking or cracking. It adapts itself to some degree of movement.
- 2. Durable:** Galvanized wire mesh has very long life. If the galvanised wire coated with PVC, the life of structure gets longer. Better for hydraulic works
- 3. Permeable:** The hexagonal wire mesh structure filled with stones provide an effective permeability throughout the structure, they are self-draining.
- 4. Economy:** Mattress Structures are very economical compared to the conventional structures especially when the stones to fill the structure are close to the work area. Low maintenance is required for the construction works (Life Time Economy)
- 5. Strength:** It can absorb the huge amount of energy and very strong under tension generated by the nature. Well-made gabion structures can exist in perfect condition for many decades.

Fig.I

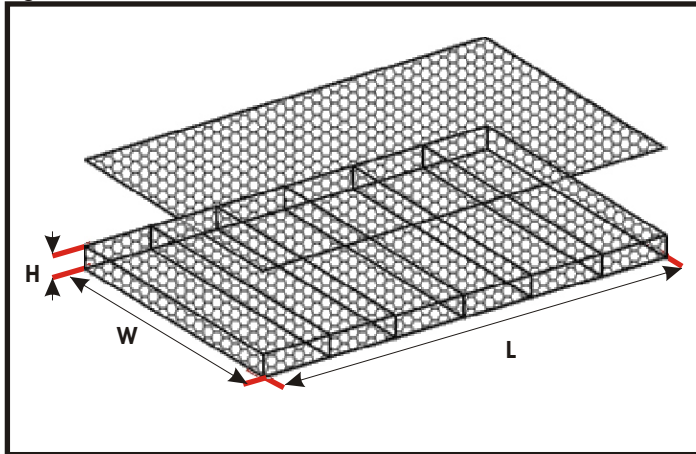


Fig.II

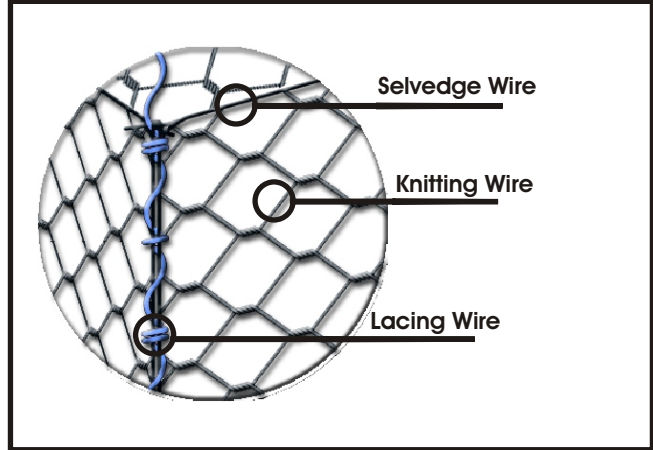


Table I

Hexagonal Double Twisted Wire Mesh Opening	
Mesh Opening	Tolerances
5x7	$\pm 10\%$
6x8	$\pm 10\%$
8x10	$\pm 10\%$

Table III

Wire Combinations						
Mesh Wire	Ø mm	2.0	2.2	2.4	2.7	
Selvedge Wire	Ø mm	2.4	2.7	3.0	3.4	
Lacing Wire	Ø mm	2.0	2.0	2.0	2.2	
Zinc Coating Rate (gr/m ²)						
Wire Thickness	Ø mm	2.0	2.2	2.4	2.7	3.0 3.4
Zinc Coating	(gr/m ²)	240	250	260	260	275 275

Table II

Wire Diameters and Tolerances							
Ø mm	2.0	2.2	2.4	2.7	3.0	3.4	3.9
\pm mm	0.05	0.06	0.06	0.06	0.07	0.07	0.08

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