

The Gabion

Maccaferri first used gabions in 1894 to restore the Chiusa di Casalecchio di Reno weir near Bologna after a flood. Since then, stone-filled wire mesh baskets have been used in road and river infrastructure on five continents.

1879 Blacksmith mesh	1894 First gabion	1906 Rectangular shape	1950 First coating	2018 PoliMac® coating
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The gabion today

Flexible, permeable and eco-friendly. Delivered flat-packed and assembled and filled on site. Made from heavily galvanised steel wire, with an optional polymer coating for harsh environments. Prefilled types and types for soil bioengineering are also available.

Product types

Heavy gabions	Stronger, thicker wires for pre-assembled, ready-to-use solutions. Polymer-coated mesh: 6×8 (wire 2.7/3.7 mm) and 8×10 (3.0/4.0 mm).
CubiMac®	Pre-assembled, PoliMac®-coated 3.4 mm wire. For sites where filling on site is difficult, such as underwater; lifted by crane with polyester slings.
Strong Face	Face or side panel made with thicker wire, for walls and revetments that need higher load or abrasion resistance on one side.

Performance

Gabions are tested for tensile strength and puncture, flexibility, and deformation in real-scale compression tests. **GSC** (Gabion Serviceability Coefficient) reduces initial strength over a 120-year service life by four reduction factors: chemical/environmental effects (corrosion), installation damage, weathering and UV, and data extrapolation.

PoliMac® coating

12×	Better abrasion resistance, including installation damage ASTM A975-21
+23%	Harder than traditional polymer coatings ASTM D2240
-35 °C	Keeps its properties in very cold conditions ASTM D746
4×	Better elongation after UV exposure ISO 4892-3, ISO 527-1
0	Contaminants released; free of heavy metals EPA 1312
120 yrs	Design life

Design software

MacSTARS: design of retaining walls and reinforced soil slopes and walls with certified (CE, BBA) products.
GAWAC 3.0: design and optimisation of gabion walls with GSC.

Sustainability

PoliMac® combined with GSC reduces material use and cuts CO₂ emissions by 40%; gabion walls emit over 10× less CO₂ than concrete walls. BIO PoliMac® is made from bio-naphtha derived from organic waste; the wire rod comes from recycled industrial wire.

Applications

- Hydraulic works: dams, channels, weirs; erosion and flood control
 - Retaining walls and soil reinforcement
 - Landscape and architecture: facades, cladding, decorative walls
 - Safety and noise barriers
 - Coastal protection, marine structures and pipeline protection
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