

**RENOMAC PLUS**  
2.2 POLIMAC®

**RenoMac Plus** are preassembled special units derived from Reno mattresses made from 6x8/2.2 Polimac® coated wire mesh, designed for being installed underwater and equipped with an extra wire mesh base panel and a geotextile to prevent erosion underneath the unit, as well as side bands to allow for continuous protection adjacent to the units. The side bands are 0.5 m wide and made of wire mesh coupled to a non-woven geotextile. The base, diaphragms, front, end and sides of the Reno Mattress units are manufactured from one continuous panel of mesh; the base is folded onto itself at regular intervals to form double diaphragms that are secured with spirals at the production facility. RenoMac Plus units are equipped with Ω-shaped lifting rebars to allow for their lifting once the units have been properly filled. The units are filled with stones and covered with lids at the project site prior to their underwater installation. The units are supplied with special vertical ties (X-Ties) to be installed on site, to secure a tighter packing of the filling stones and improve the hydraulic performances. Units are produced in compliance with The Construction Products (Amendment etc.)(EU Exit) Regulations 2020 on the basis of UKAD 200019-00-0102 and UKTA-0836-22/0019.



| RENOMAC PLUS PERFORMANCES                          |                       |  | 6x8 2.2 HT POLIMAC®   |
|--|-----------------------|--|---|
| <b>Physical Properties</b>                         |                       |  |   |
| Steel wire diameter (int. / ext.)                  | EN 10218-2            | mm   | <b>2.20 / 3.20</b>  |
| Selvedge wire diameter (int. / ext.)               | EN 10218-2            | mm   | <b>2.70 / 3.70</b>  |
| Galmac coating                                     | EN 10244-2            | Class  | <b>Class A</b>  |
| <b>Mechanical Performances</b>                     |                       |  |   |
| Maximum allowable shear stress <sup>(1)</sup>      | EAD 200019-01-0102    |  | <b>534 N/m<sup>2</sup></b><br><b>637 N/m<sup>2</sup></b> <b>h=0.23 m</b><br><b>h=0.30 m</b> |
| Mesh Tensile Strength                              | EN 10223-3            | kN/m   | <b>40 ± 3</b>   |
| Mesh Punching Load                                 | EAD 200019-01-0102    | kN   | <b>20 ± 1</b>   |
| <b>Durability Performances</b>                     |                       |  |   |
| Service life of polymer coating at 25 °C           | UL 746B<br>EN 60216-8 | Years  | <b>&gt; 125</b>   |
| SO <sub>2</sub> corrosion resistance               | ISO 6988              | Cycles   | <b>&gt; 28</b>  |
| Salt Spray (5% DBR)                                | ISO 9227              | Hours  | <b>&gt; 25,000</b>  |
| UV resistance (@ 2,500 hours) <sup>(2)</sup>       | ISO 4892-3            | %  | <b>&lt; 25</b>  |
| Abrasion resistance in dry conditions              | EAD 200019-01-0102    | Cycles   | <b>&gt; 300</b>   |
| Abrasion resistance in wet conditions              | ISO 22182             | Weight loss                                      | <b>&lt; 2 %</b>   |
| Brittleness Temperature                            | ASTM D746             | °C   | <b>&lt; -35</b>   |
| Corrosion Spread (@ 2,500 hours)                   | ASTM A975             | <b>Corrosion length less than a mesh opening</b> |   |
| <b>Environmental and Sustainability Properties</b> |                       |  |   |
| Global Warming Potential (GWP <sub>100 yrs</sub> ) | EN 15804              | kgCO <sub>2</sub> equiv / Kg product             | <b>&lt; 2.00</b>  |
| Leachate Test                                      | EPA 6020B             | µg / L   | <b>Lower than the limits set by regulations<sup>(3)</sup></b>                               |
| PFAS in Water Test <sup>(4)</sup>                  | EPA 537.1             | ng / L   | <b>Not detected</b>   |
| Smoke toxicity                                     | ISO 5659-2, EN 17084  |  | <b>Index of toxicity CIT<sub>G</sub>(8) &lt; 0.10</b>                                       |
| Environmental Harmlessness                         | M GEOK E:2016         | <b>Environmentally Uncritical</b>                |   |
| <b>GEOTEXTILE PERFORMANCES</b>                     |                       |  | <b>MACTEX® N or H 60.1</b>  |
| <b>Physical Properties</b>                         |                       |  | Polymer raw material   High tenacity PP fibres  |
| Mass per unit area                                 | EN ISO 9864           | g/m <sup>2</sup>                                 | <b>300</b>  |



Download the EPD from [maccaferri.com/EPD](https://maccaferri.com/EPD)



Download the digital model for free on [bimstore](https://bimstore.com) or on [maccaferri.com/BIM](https://maccaferri.com/BIM)

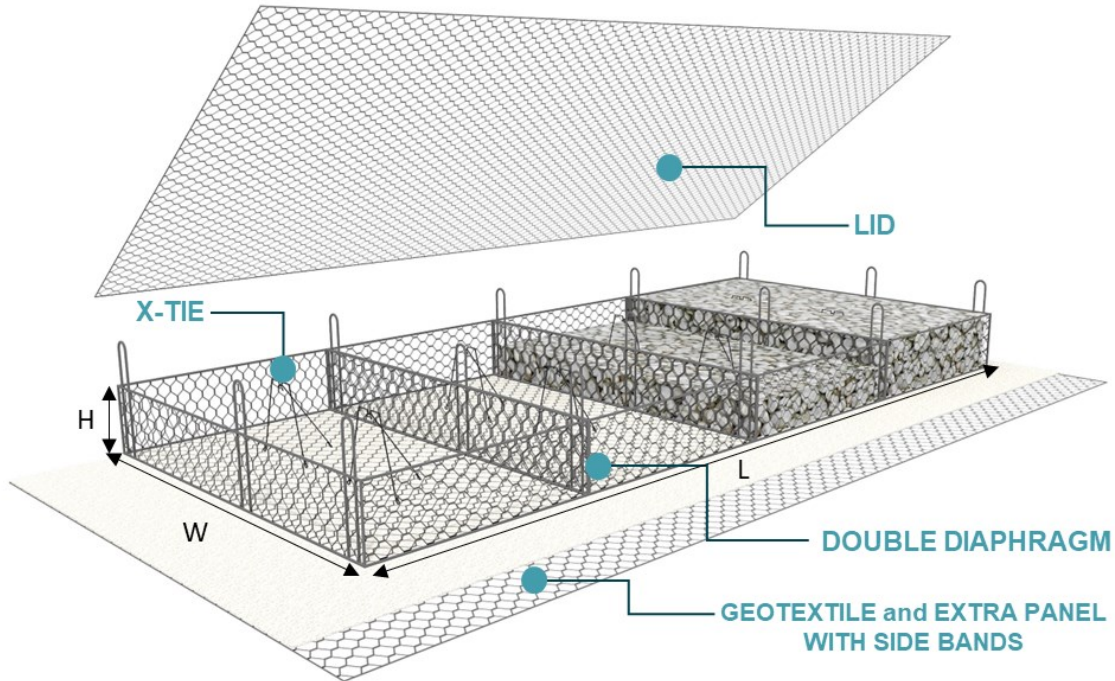


UKTA-0836-22/0019



0836-CPR-24/F7078

## RenoMac Plus



| RenoMac Plus sizes  |               |                | Accessories (*):  |
|---|---------------|----------------|---|
| Length (m) - L  | Width (m) - W | Height (m) - H | Stainless Steel C-Rings:  |
| 4   | 2             | 0.23 - 0.30    | <ul style="list-style-type: none"> <li>• Diameter: 3.00 mm</li> <li>• Tensile strength &gt; 1,550 MPa</li> <li>• Pull-apart strength &gt; 2.0 kN</li> <li>• Max spacings: 200 mm</li> </ul> |
| 5   | 2             | 0.23 - 0.30    |   |
| 6   | 2             | 0.23 - 0.30    |   |
| <small>Sizes and dimensions are nominal.<br/>Tolerances of ±5% of the length, width and ± 2.5 cm of the height shall be permitted</small> |               |                | <small>(*) The accessories are NOT included, unless explicitly mentioned in the price offer. For additional details, see the installation manual.</small>                                   |

DESIGN  
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### Critical Shields parameter $\Psi_{CR} = 0.19$ .

The Critical shields parameter of the RenoMac Plus have been obtained by full scale flume tests performed at the Engineering Research Center of Colorado State University (USA) and basin scale model test against propeller actions performed at Deltares (ND). Use Maccaferri **MacQuay Design software** to effectively design RenoMac Plus as protection system against the scour caused by ships manoeuvring near berthing structures.



- (1) Full scale flume tests performed at the Engineering Research Center of Colorado State University (USA) following the ASTM D 6460 test methodology; actual design values depend on stones characteristics (D50, Cu) and installation conditions (correct use of X-Ties, placement of the units on the bed or on the sloped bank).
- (2) UTS/elongation @ break of the base compound after 2,500 hrs exposure to QUV-A do not change more than 25% from initial test results.
- (3) Test preparation in accordance with EPA 1312; The presence or not of 31 different metals were analysed in the leachate. Regulations: (a) Water Framework Directive 2000/60/EC; (b) CCME Water Quality Guidelines for the Protection of Aquatic Life, Freshwater; (c) U.S. EPA National Recommended Water Quality Criteria (Aquatic Life, Freshwater), 2006.
- (4) The presence or not of 28 different PFAS were analysed. The PFOS and PFOA were not detected at <2 ng/L, while other PFAS and their derivatives were also not detected between <2 ng/L and < 4 ng/L.

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