

RENOMESH BIO**Anti-burrowing mesh protection reinforced geocomposite: high abrasion resistant (PoliMac®) coated wire mesh coupled to coir fibre biotextile**

applicable to European Countries only

PART 1 – PRODUCT**1.1 DESCRIPTION**

The anti-rodent protection geocomposite is a preassembled product made of double twisted wire mesh rolls mechanically coupled to an anti-erosion biotextile made of coir fibres. The units shall be manufactured in compliance with BS EN 10223-3, with Zn-Al alloy and a High Abrasion Resistant (PoliMac® or equivalent) polymer coated steel wire.

The units are manufactured in compliance with The Construction Products (Amendment etc.)(EU Exit) Regulations 2020 on the basis of UKAD 230008-00-0106 and UKTA-0836-22/0022.

[For Republic of Ireland: The units are manufactured in accordance with Construction Product Regulation CPR 305/2011 and have a CE marking in compliance with EAD 230008-00-0106.]

The management and production system of the supplier shall be certified in compliance with ISO 9001.

All listed performances must be verifiable on laboratory test reports conducted by independent research institutes, the relevant documentation shall be submitted to the supervisor for the acceptance of the material

1.2 FUNCTIONAL CHARACTERISTICS

The tensile strength of the steel wire mesh shall be 40 ± 3 kN/m, in accordance with BS EN 10223-3.

The punch resistance of the steel wire mesh shall be 48 ± 5 kN; tests on a 3x3m sample are laterally constrained following the EAD 200026-00-0102 and ISO 17746 test methodology.

1.3 MATERIALS

The double twisted steel wire mesh shall be manufactured with 6x8 mesh type (BS EN 10223-3, Table 2), woven with a drawn steel wire core of 2.20 mm in diameter, with a minimum quantity of 230 g/m² of Zn-Al metallic coated alloy, in accordance with ISO 7989-2 and BS EN 10244-2, Table 2, Class A.

The double twisted steel wire mesh shall be resistant to outwearing accelerated ageing when subject to test in a Sulphur dioxide environment (ISO 22479): after 28 cycles of discontinuous test, the mesh shall not show more than 5% of DBR (Dark Brown Rust).

The metallic coated wire core shall be protected with a high abrasion-resistant polymer coating (PoliMac® or equivalent), with a nominal thickness of 0.5 mm, resulting in a nominal overall diameter of 3.20 mm.

The 100% coir fibres biotextile shall have a mass per unit area not lower than 700 g/m² (EN ISO 9864), tensile strength (MD/CD) of 20/9 kN/m (BS EN ISO 10319) and coverage ratio greater than 60%.

1.4 POLYMER COATING

The polymer coating shall comply with the following requirements:

- Long-term durability: service life greater than 125 years at 25 °C
- Outwearing accelerated ageing in salt spray (ISO 9227): after 20,000 hours of exposure, the mesh shall not show more than 5% of DBR (Dark Brown Rust).
- Abrasion resistance in wet conditions (ISO 22182): after 40,000 abrading cycles the weight loss shall not be greater than 3%
- Abrasion resistance in dry conditions (ASTM A975): after 300 cycles the polymer coating shall not expose the metal wire.
- Resistance to UV radiation (ISO 4892-3, type 1A): after 2,500 hours of exposure to QUV-A the tensile strength and elongation at break of the base compound shall not change more than 25% from the initial test results.
- Brittleness temperature: lower than -35°C (ASTM D746).
- Corrosion spread test (ASTM A975): after 2,500 hours immersion of the wire sample in a HCl solution the maximum corrosion length shall be less than a mesh repetition.

1.5 LACING

The steel rings used for fastening operations shall be made of stainless steel and have the following characteristics:

- Diameter: 3.00 mm
- Tensile strength > 1,550 MPa
- Pull-apart strength > 2.0 kN

1.6 ENVIRONMENTAL AND SUSTAINABILITY PROPERTIES

1.6.1 Environmental Product Declaration

The anti-rodent protection geocomposite (RenoMesh BIO®) units shall have a Type III Environmental Product Declaration (EPD) registered and certified in accordance with ISO 14025 and BS EN 15804, to evaluate the environmental impact and give the possibility to calculate the Life Cycle Assessment (LCA) of the designed technical solution.

Such sustainability performances/requirements have to be reported in the Type III EPD certificate; certifications of not authorised bodies or self-certificates issued by the manufacturer, are not allowed.

The value shall be declared, as per Table 1, in terms of Global Warming Potential (GWP 100 years) and expressed in *kg CO₂-Equiv./kg*.

Table 1 – Environmental and sustainability properties

Global Warming Potential (GWP 100 years)	ISO 14025 BS EN 15804	certified numeric value	[kg CO ₂ -Equiv./kg]

1.6.2 Environmental Harmlessness

The polymer coated steel wires shall be tested to ensure their Environmental Harmlessness according to the following procedures:

- Synthetic Precipitation Leaching Procedure (SPLP) preparation as per EPA 1312 and Metals in Water by ICPMS (low level) as per EPA 6020B in which the presence or not of 31 different metals shall be analysed using atomic spectroscopy.
The results shall be in compliance with: (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.
- PFAS test in water by SPE/LCMS as per EPA 537.1 in which the presence or not of 28 different PFAS shall be analysed, showing that the polymer coated steel wires are PFAS free. Resulting in a concentration lower than 2 ng/L of PFOS and PFOA and < 4 ng/L for other PFAS.
- ELUATE Tests on the environmental safeness, conducted as per M GEOK E:2016, shall ensure that the polymer coating is not critical for the environment.
- Smoke toxicity tests conducted as per ISO 5659-2 and EN 17084 shall ensure a Gases Conventional Index of Toxicity after 8 minutes sampling CIT_G (8) < 0.10 and a HCl concentration < 36 ppm