



Turf Reinforcement Mats (TRMs)

High Performance Turf Reinforcement Mats (HPTRMs)

ACEMat™ R series are made of high-strength polypropylene monofilament, woven together to form mesh structures into rectangular pyramid mesh structures for erosion control and channel protection.

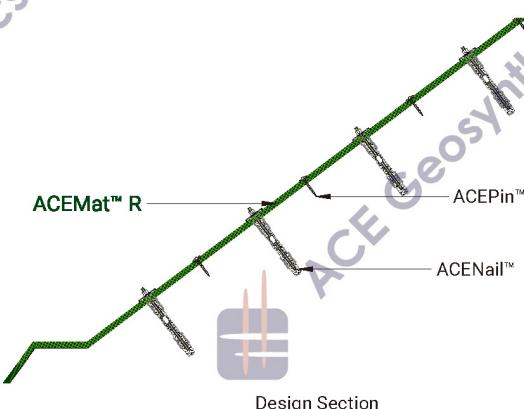


Outstanding erosion control and vegetation enhancement performance

The three-dimensional woven structures of ACEMat™ R HPTRMs are stable and thick (up to 7 mm), allowing ACEMat™ R to interlock with soil to form a solid, dissipate run-off/stream erosive force, protect the soil surface from water splash and wash, and retain seeds and plants when vegetation is needed.

Long-lasting strong and cost effectiveness

Along with the features of high tensile strength (up to 60kN/m), long-lasting performance ensured by excellent resistance to abrasion, ultraviolet, and oxidation, and easy installation with anchors such as ACENail™ (soil nails). ACEMat™ R can offer effective and efficient solutions for controlling slight to severe erosion problems, or for channel lining construction.



ACEMat™ R has the following advantages in comparison to conventional methods such as shotcrete or other hard armor protection:

-  Comprehensive protection at low rates
-  Versatile application areas, including normal to steep slopes, riverbanks, channels, etc.
-  Effective vegetation promotion
-  Reduces carbon emissions (up to 96% CO₂ reduction)
-  Quick and easy installation

In this way, ACEMat™ R, with its characteristic, economic and environmental advantages, is proposed as the ideal solution for the control of erosion.



According to the product classification guideline of the Erosion Control Technology Council (ECTC), ACEMat™ R Series is categorized as Type 5 - Turf Reinforcement Mats (TRMs)/ HPTRMs, which can long-term control erosion. Based on the different levels of tensile strength specification shown in the table below, the biaxial tensile strength of ACEMat™ R I is 45/30kN/m, referring to 5. E; the biaxial tensile strength of ACEMat™ R III is 60/50kN/m, referring to 5. F. The ECTC suggests that the maximum service life of Type 5 products should be more than 36 months. To learn more information on the durability of ACEMat™ R, please contact us.

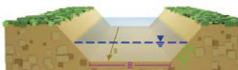
| Type | Product Selection | Slope H: V | Unvegetated Shear Stress D6460 | Vegetated Shear Stress D6460 | Seed Emergence D7322 |
|------|-------------------|------------|--------------------------------|------------------------------|----------------------|
| 5.E | ACEMat™ R I | 0.5:1 | ≥96 Pa | ≥575 Pa | ≥250% |
| 5.F | ACEMat™ R III | 0.5:1 | ≥96 Pa | ≥670 Pa | ≥250% |

| Type | MD Tensile Strength-D6818 | CD Tensile Strength-D6818 | Unit Weight D6566 | Thickness D6525 | UV D4355 |
|------|---------------------------|---------------------------|----------------------|-----------------|---------------|
| 5.E | ≥21.9kN/m | ≥21.9kN/m | ≥271g/m ² | ≥6.35mm | ≥90% @1000hrs |
| 5.F | ≥43.8kN/m | ≥43.8kN/m | ≥271g/m ² | ≥6.35mm | ≥80% @3000hrs |

ECTC Standard Specification

ACEeo™ CL-Design, the design tool on the ACE Geosynthetics official website, is recommended to operate with ACEMat™ R Series, to preliminarily evaluate the channel lining application. The analyze complies with the Federal Highway Administration (FHWA) guidelines.

ACE[∞] CL-Design




ACE Geosynthetics



Design Discharge, Q : 1.2 m^3/sec

Bottom Width, B : 4.0 m

Side Slope, Z : 3.0 m

Channel Bottom Slope, S : 0.001 m/m

Required Factor of Safety, FSR : 1.50

Linier Material : ACEMat R

Manning's Roughness Coefficient, n : 0.028

Soil Classification : GC

Plasticity Index, PI : 16.00

Void Ratio, e : 0.50

Result

| | | |
|------------------------------------|--------|-----------------------|
| Flow Depth, d | 0.5 | m |
| Area of Flow, A | 2.8 | m^2 |
| Wetted Perimeter, P | 7.2 | m |
| Hydraulic Radius, R | 0.4 | m |
| Maximum Shear Stress, τ_d | 4.9 | N/m^2 |
| Permissible Shear Stress, τ_p | 31 | N/m^2 |
| Factor of Safety | 6.33 | |
| Material Availability | STABLE | |



Sample Report for ACE[∞]™ CL Design

ACE Geosynthetics has conducted other tests to prove the performance of ACEMat™ R in addition to those related to the above specifications.

1. Channel erosion test in accordance with ASTM D6460

This test is conducted by a third-party laboratory that simulates soil conditions after stormwater-induced erosion. When TRM is applied to protect the earthen channels, it absorbs the hydraulic force, shear forces, and overland flow, thereby reducing soil particle loosening.



2. Vegetation growth test in accordance with ASTM D7322

The result of the test shows that in the same controlled environment, the germination rate, plant height and grass weight of the covered group are better than those of the control group without cover, it was confirmed that TRM is helpful for the germination of seed promoters and the ability of plant growth.



3. Scouring resistance of ACEMat™ R in accordance with ASTM D7101

We simulate the test to evaluate the amount of soil sprayed or carried by runoff and rain splash; the test shows that the treatment group covered with ACEMat™ R contains more soil than the other. The outcome can prove that TRMs have a stronger anti-erosion ability.



The quality of ACE Geosynthetics' TRMs is rigorously controlled to achieve test specifications and remarkable performance. We strive to develop, manufacture and promote quality geosynthetics and services to solve engineering problems with considerations of safety, economy, and environment. Ace your project with ACE products.