

# TL-0027 — Protection Courses Used with GCP Waterproofing Systems Technical Letter

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Protection of BITUTHENE<sup>®</sup> and PROCOR<sup>®</sup> Membranes from site damage is critical to the success of the waterproofing system. Recommended protection courses for use over BITUTHENE<sup>®</sup> and PROCOR<sup>®</sup> Membranes include:

- GCP HYDRODUCT<sup>®</sup> Drainage Composites
- 0.25 in. (6 mm) or 2 layers of 0.125 in. (3 mm) Asphaltic Hardboard
- 1 in. (25 mm) extruded polystyrene board

These materials are proven based on field experience. Other types of materials, such as woven and non-woven geotextiles, are not recommended as protection courses for use over Bituthene<sup>®</sup> and Procor<sup>®</sup> membranes because they do not offer the same degree of protection as the materials listed above.

There are many complex field variables that affect the performance of a protection board used over a waterproofing membrane such as type of backfill, aggregate mass and shape, angle of impact, and velocity at impact. Unfortunately, a standardized laboratory test does not exist that takes into account these complex variables.

Existing standardized laboratory tests, such as ASTM D4833 Standard Test Method for Index Puncture Resistance of geotextiles, Geomembranes, and Related Products, should not be used to benchmark the performance of a protection course placed over BITUTHENE<sup>®</sup> and PROCOR<sup>®</sup> waterproofing membranes. Tests like this correlate poorly with real world conditions. ASTM D4833 simply measures the force required to push an 0.3 in. (8 mm) diameter steel rod through a 1.75 in. (45 mm) diameter unsupported sample of the test specimen at a rate of 12 in./min (300 mm/min). This laboratory test does not take into account the mass and shape of aggregate, grossly underestimates the velocity of the aggregate at the point of contact, and tests the protection course in an unsupported configuration whereas in the real world the protection course is supported by a structural substrate.

Any exposed PREPRUFE<sup>®</sup> Membrane requires a protection course prior to backfilling.

Additional acceptable protection courses include 0.25 in. (6 mm) extruded polystyrene (fanfold) board and 1 in. (25 mm) expanded polystyrene board. These protection courses can be used when a lower level of protection is acceptable. Backfill should not contain sharp rock or aggregate over 2 in. (50 mm) in diameter.

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