TENCATE Polyfelt®

INSTALLATION GUIDELINES

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

TENCATE GEOSYNTHETICS

TENCATE Polyfelt®

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

CONTENTS

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

1. General

This document is prepared to help ensure that the filter geotextile, once installed, will perform its intended design functions. To do so, the product must be identified, handled, stored and installed in such a way that its physical property values are not affected and the design conditions are ultimately met as intended. This document does not account for every possible construction scenario. This document contains information consistent with generally accepted practices of identifying, handling, storing and installing filter geotextiles for most revetment applications. Failure to follow these guidelines may result in the unnecessary failure of the geotextile in an otherwise properly designed application.

2. Product and Application

Polyfelt® filter geotextiles are manufactured using UV stabilized polypropylene fibers, needlepunched together to form a variety of robust and durable filtration fabrics with optimum permeability and pore size to cover a wide matrix of base soils and granular materials coming in contact with the geotextile (see Figure 1).

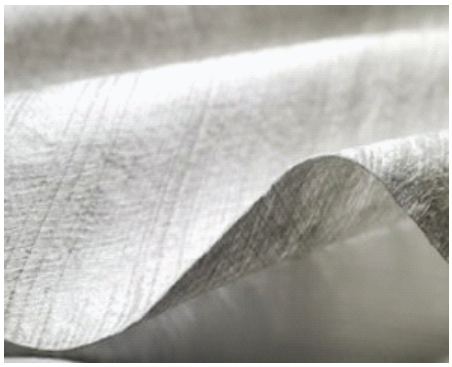

Figure 1. Polyfelt® filter geotextile

The filter geotextile acts like a granular filter to prevent erosion of soil though the stone and rock layers while at the same time allowing the relatively free movement of water. For example, filter geotextiles are used as filters beneath rock revetment to prevent the protected soil from eroding out of the revetment.

3. Material Identification, Storage and Handling

The geotextile shall be rolled on cores having strength sufficient to avoid collapse or other damage from normal use. Each roll shall be wrapped with a plastic covering to protect the geotextile product from damage during shipping and handling. Each roll shall be identified with a durable gummed label or the equivalent, clearly legible on the outside of the roll wrapping. The label shall indicate the manufacturer's name, the style number and the roll number.

Upon delivery, check the roll labels to verify that the correct geotextile product has been received. Immediately inspect the geotextile rolls to ensure it is free of any flaws or damage that might have occurred during shipping or handling. While unloading or transferring the geotextile from one location to another, care should be taken to prevent damage to the wrapping, core, label or the geotextile itself.

If the geotextile is to be stored for an extended period of time, the geotextile shall be located and placed in a manner that ensures the integrity of the wrapping, core and label as well as the physical properties of the geotextile product. This can be accomplished by elevating the geotextile rolls off the ground on dunnage (see Figure 2).

Care should be taken to ensure that the geotextile rolls are adequately covered and protected from ultraviolet radiation, chemicals that are strong acids or strong bases, fire or flames including welding sparks, temperatures in excess of 60°C, and human or animal destruction.

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

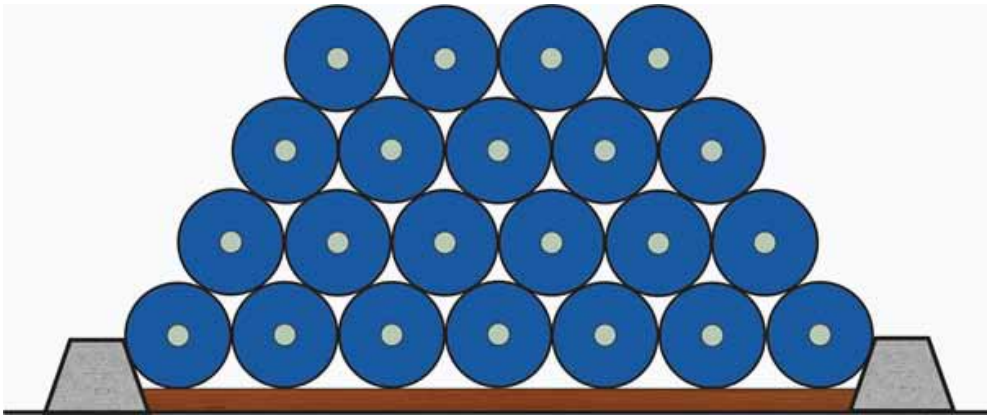

Figure 2. Recommended setup for safe onsite stacked storage of Polyfelt® filter geotextile rolls

4. Ground Preparation

Clearing and grubbing the slope surface, including remove any large roots, stumps, large rock or sharp objects that might puncture or tear the geotextile (see Figure 3). Banks are to be evenly trimmed according to the Engineer's design and drawings.

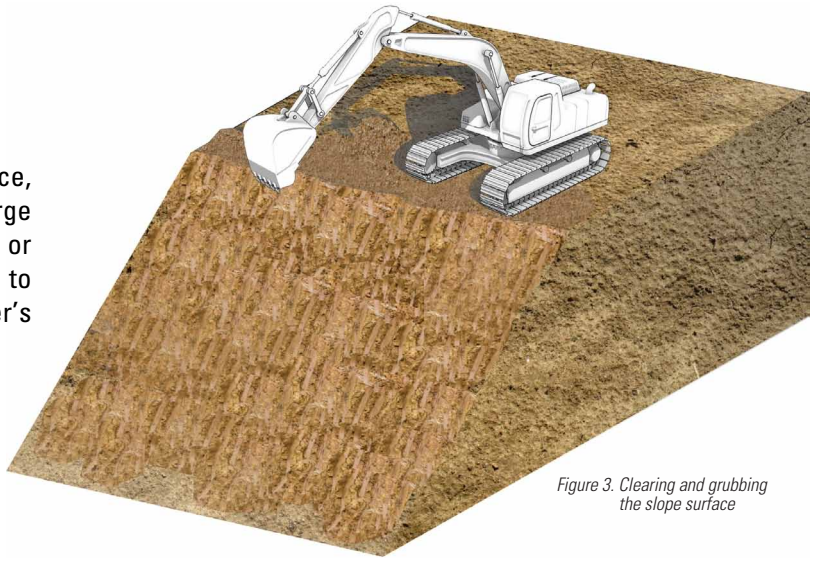

Figure 3. Clearing and grubbing the slope surface

5. Installation

Polyfelt® filter geotextiles are supplied generally in standard rolls of specific roll length and width. Before unrolling the geotextile, verify the roll identification, length, and installation location with the contract drawings. While unrolling the geotextile, inspect it for damage or defects. Discard or repair any damage that occurred during storage, handling or installation as directed by the Engineer.

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

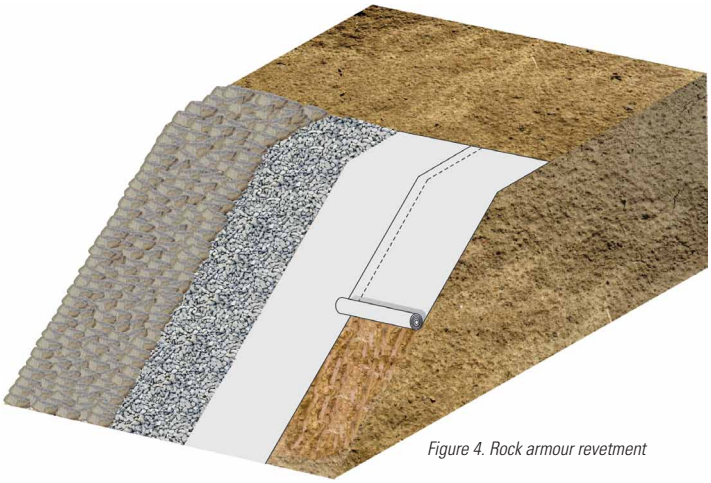

Figure 4. Rock armour revetment

Geotextile filters are prepared and placed as per design drawings and/or the Engineer's instruction. The installation of the geotextile filter may be carried out using land-based machinery sitting on top of the slope or by water waterborne placement with the help of a pontoon. Place the geotextile over the prepared ground to be as smooth and wrinkle free as possible. Figure 4 shows a rock amour revetment in-laid with geotextile filter and further progressive laying of geotextile filter.

6. Jointing

When the revetment is constructed at lower water level or dry location, a nominal geotextile edge overlap of 500 mm is generally sufficient prevent formation of filter discontinuity during backfilling operation (see Figure 5(a)). However, in some conditions this may not be adequate. For example, when revetment is constructed significant submerged under water, the overlap is recommended to be larger than nominal overlap which geotextile edge overlap of 1.0 m (see Figure 5(b)). Nevertheless, sewn is allowable to create a larger area of geotextile.

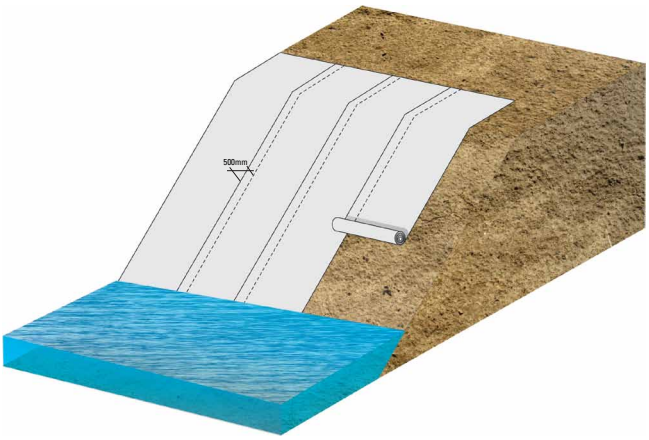

Figure 5(a). Typical overlap joint for Polyfelt® filter geotextile at lower water level

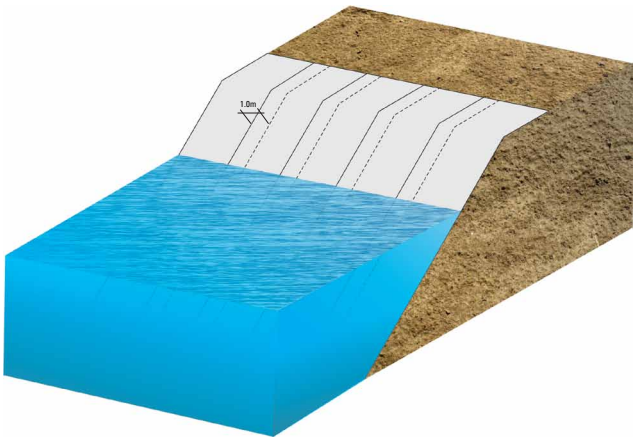

Figure 5(b). Typical overlap joint for Polyfelt® filter geotextile at high water level

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

7. Rock Placement

The rock placement shall be done according to design drawings and/or the Engineer's instruction. It is important for the revetment to have proper toe scour protection, the detailing of which may follow one of many possibilities shown in Figure 6(a) to 6(g). These figures are adapted from "The Rock Manual: The use of rock in hydraulic engineering (2nd edition)"; CIRIA, CUR, CETMEF (2007).

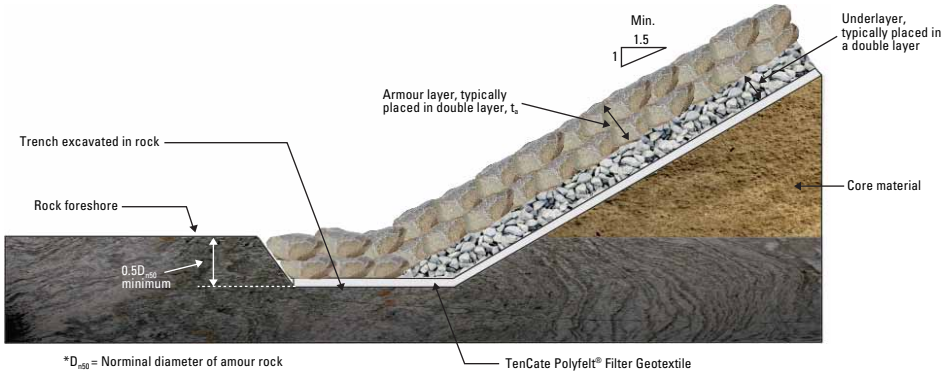

Figure 6(a): Rock foreshore – excavated trench

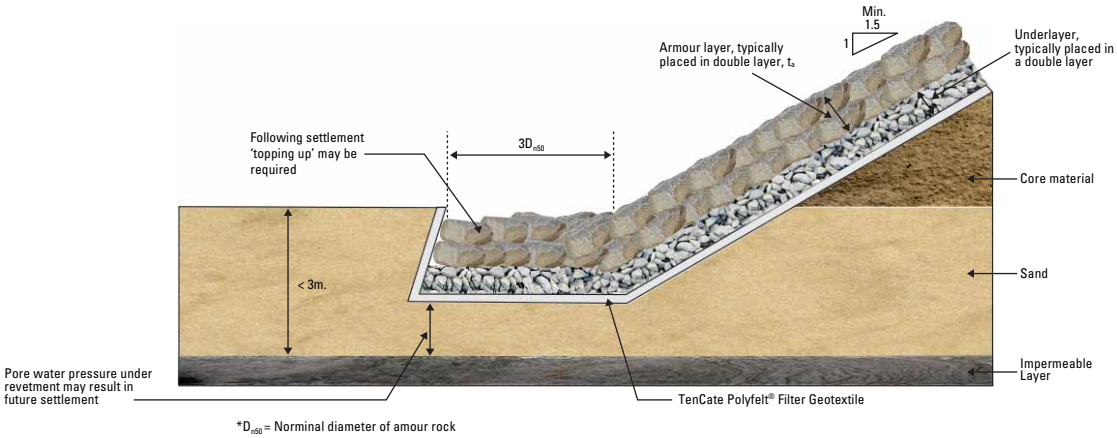

Figure 6(b): Impermeable layer near foreshore level – some interim maintenance needed

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

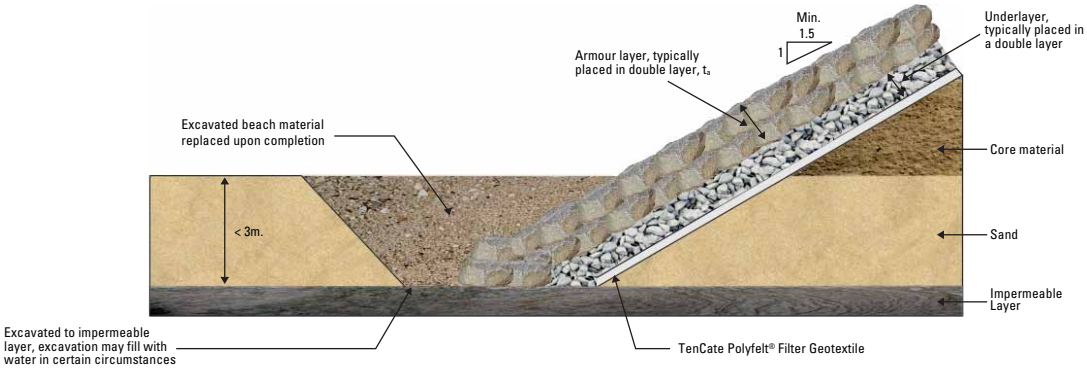

Figure 6(c): Impermeable layer near foreshore level – excavation to bedrock

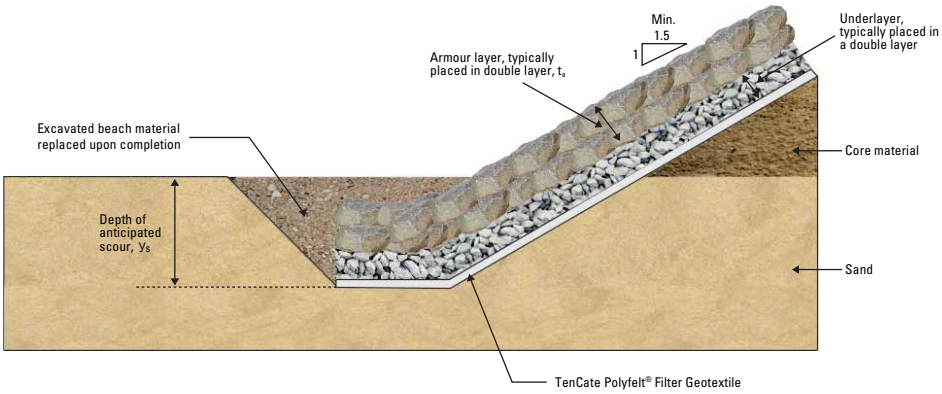

Figure 6(d): Sand or gravel foreshore with low scour potential

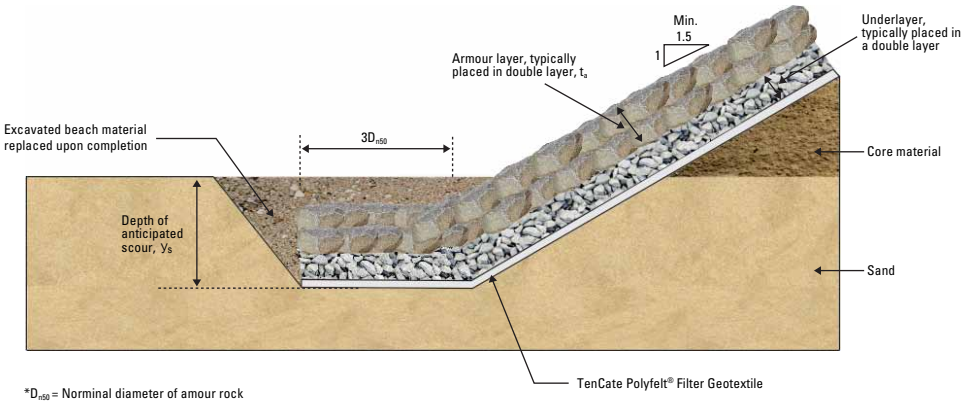

Figure 6(e): Sand or gravel foreshore with moderate scour potential

Polyfelt® Filter Geotextiles for Revetment Filtration Applications

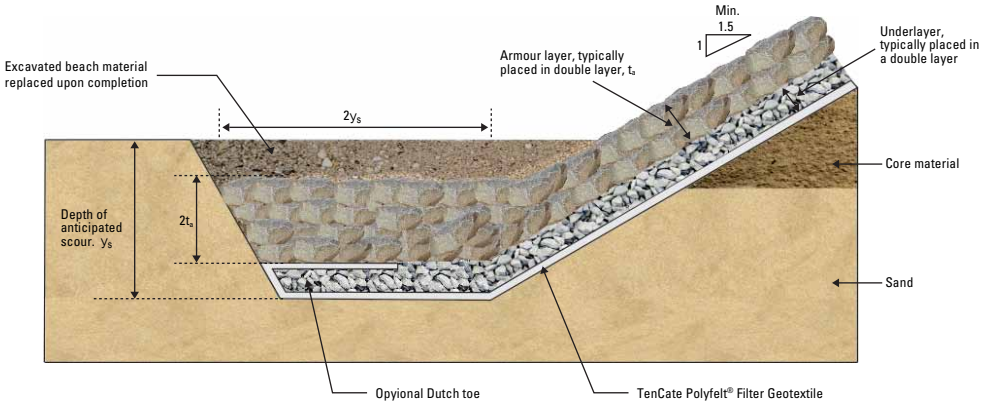

Figure 6(f): Severe scour potential – excavated trench

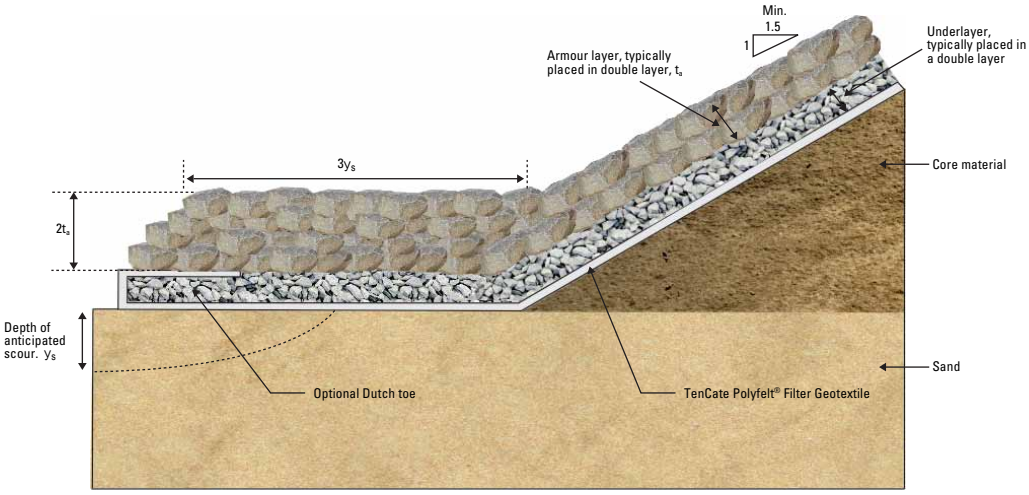

Figure 6(g): Severe scour potential – no excavation

TenCate Geosynthetics Asia Sdn. Bhd. (264232-U)
14, Jalan Sementa 27/91, Seksyen 27,
40400 Shah Alam, Selangor Darul Ehsan, Malaysia.
Tel: +60 3 5192 8568 Fax: +60 3 5192 8575
Email: info.asia@tencategeo.com www.tencategeo.asia

TENCATE GEOSYNTHETICS