Texel®
BY/PAR ALKEGEN

Geotextile

Geosynthetic Materials Solutions for Improved Ground Structure

Installation Guide

ALKEGEN

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Note : the concept has to be determined by the engineer in charge of the project. Any information, verbal or written, forwarded by texel technical materials, cannot in any way be interpreted as conceptual information. Any information must be verified and approved by the engineer in charge of the project.

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1. Product Descriptions and Applications

1.1 Product

Used in civil engineering, environmental, and landscaping architecture projects, geotextiles make it possible to effectively separate, filter, improve drainage, reinforce, and distribute loads on soil and surfaces.

Whether part of the C series, the E series, the F series, or the P series, geotextiles are permanent and impervious to the acids found naturally in the soil, giving them a life span exceeding those of the structures they protect. They are:

- Proven solutions **as an alternative to natural materials,** and promote **sustainable development**;
- Innovative solutions that **shorten timelines** and **reduce backfill requirements**;
- Adapted products resulting in **lower** overall construction **costs**;
- Products that facilitate the construction of structures even in situations involving **complex soil composition;**
- Products that maximize the **useful life** of structures;
- Products that help to **mitigate social impact** and meet deadlines.

1.2 Applications

Geotextiles are permeable technical textiles made from synthetic fibers that are used in civil engineering, environmental, and landscaping architecture projects to separate, filter, improve drainage, reinforce, and more effectively distribute the loads on soil and other surfaces. They are permanent and impervious to the acids found naturally in the soil, giving them a life span exceeding those of the structures they protect.

2. Receiving, Handling and Storage

2.1 Receiving

Rolls are packed when manufactured to withstand standard on-site handling. An adequate mode of transportation must be used to avoid damage during delivery on-site.

Each roll is assigned a unique series number that may be used to trace the production lot, if required. Labels are placed on the following locations:

- On the packaging at the end of the roll
- On the material to one of the ends of the roll
- In the cardboard tube to one of the ends of the roll

When rolls are received, it is important to check the condition of the rolls and packaging.

2.2 Handling

The installer must handle the rolls without damaging them in any way. The rolls can be handled using a forklift or appropriate nylon straps so as not to damage the packaging or the product.

When unloading at the worksite, make sure not to drag the material on the floor of the trailer or along the ground, as this can result in damaging the packaging and the product.

2.3 Storage

From the time they are received until they are used, the rolls must be stored on a clean, non-abrasive surface and be protected from any mechanical damage, prolonged exposure to ultraviolet rays, puncturing, tearing and anything else that could affect their quality. Damaged packaging can be repaired by applying protective adhesive tape, or a new bag can be used. Unused parts of the roll must be repackaged to protect them until they are used.

2.4 Health and Safety

	At each step of the conception until completion, each worker must work safely. Whether it is for the materials, tools or machineries operation, working environment, the health and the safety should be priorities.

3. Installation Instructions

3.1 Site Preparation

The site must be adequately prepared so that the surface is homogenous. Roots, large rocks, and other debris that could puncture the geotextile must be removed

3.2 Gotextile Preparation

Les procédures d'installation des géotextiles sont les mêmes, peu importe la série ou la fonction pour laquelle ils sont utilisés. Les procédures diffèrent selon le plan d'installation soit : à l'horizontale, à la verticale et en pente ou pour tranchée drainante. Ces procédures de mise en place sont détaillées dans les sous-sections suivantes.

3.3 Overlap

A minimum 300 mm overlap is required for longitudinal and transversal seams, for all types of applications. Under certain conditions, (soil with low bearing capacity, major constraints for constructability, etc.), it is important to check with the manufacturer's representative to ascertain the appropriate overlap for the type of structure. Factory or on-site welding or sewing will reduce the required overlap.

In a case where the sewing is done on-site, it is recommended that a space measuring 25 mm be left between the edge of the geotextile and the seam.

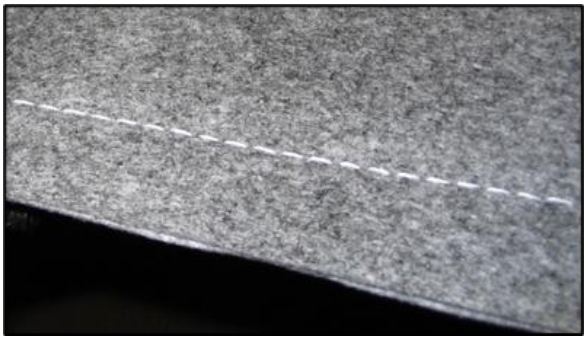


Figure 1 – Representation of a flat lock seam

The recommended overlap according to soil strength is presented in the following table :

Minimum Recommended Overlap		
CBR (%)	Cu (kPa)	Minimum overlap
Over 2	> 60	300 - 450 mm
1 - 2	30 à 60	600 - 900 mm
0.5 - 1	15 à 30	900 mm or seam
Below 0.5	< 15	Seam

3.4 Backfilling

The backfilling method must be appropriate for the application and the type of geotextile.

Trucks may reverse only over a minimum thickness of 300 mm of compacted granular material when unloading. The backfill must be spread using a tracked vehicle.

⚠	Equipment must never drive directly over the geotextile.

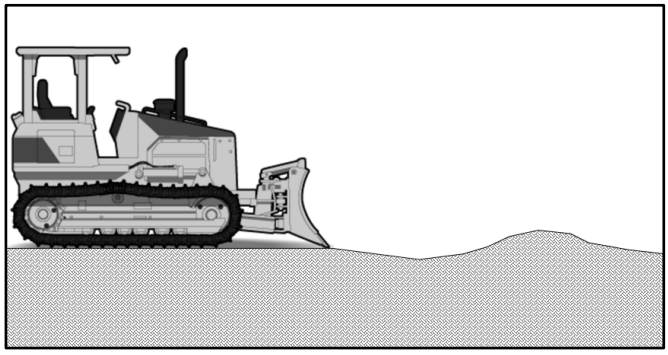
The angle, type of compacting, and maximum thickness of the layers will respectively be obtained and selected based on the properties of the supporting soil and the backfill.

For parking lot, basin and other open area construction, especially thick access roads must be built to accommodate trucks and other such equipment.

3.5 Installation Details According to Application

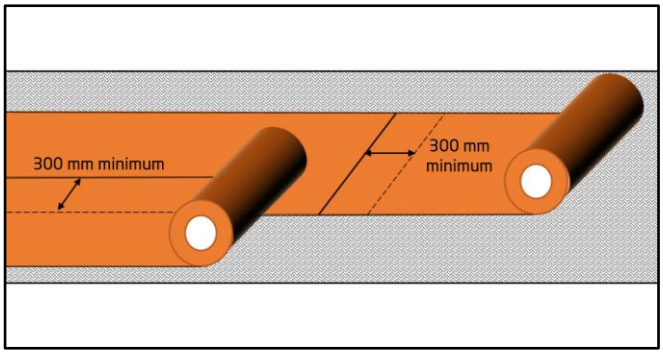
3.5.1 Horizontal Installation

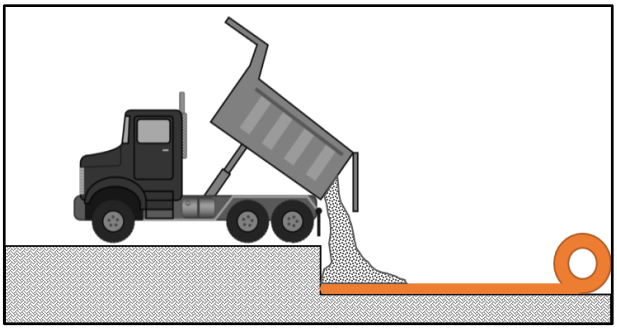
Horizontal installation is generally used for road and transport applications. The geotextiles used for these types of applications can fulfil one or several roles such as separation, filtration, drainage, reinforcement, and protection.



1) Level the land and remove large rocks or other debris that could puncture the geotextile

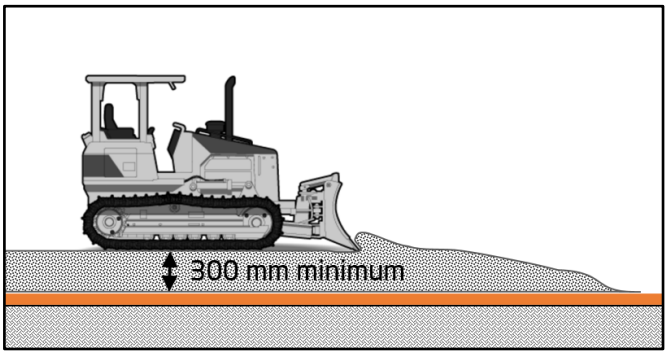
2) Unroll the geotextile. It should be slightly taut to prevent wrinkling. Comply with the overlap indicated in the specifications.





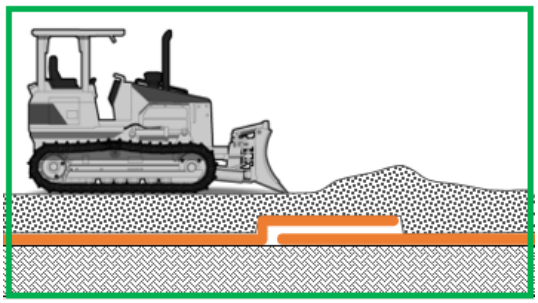
3) Unload the backfill. Never drive directly over the geotextile. The use of an access road over the top is preferable.

4) Spread and compact the backfill to the thickness indicated in the specifications. A minimum compacted thickness of 300 mm is required.

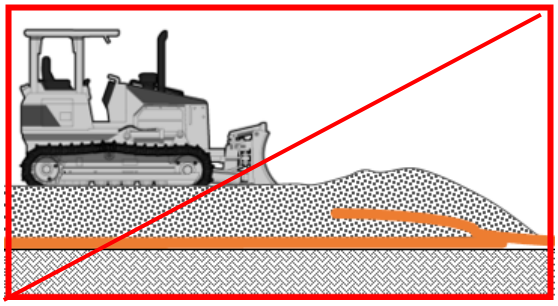


<u>Chevauchement</u>

⚠	The overlap at the ends of the rolls must consider the direction of the backfilling to prevent the geotextile from lifting.



To prioritize



To avoid

For installation in a curve, the minimum overlap must be respected in the curve's outer radius.

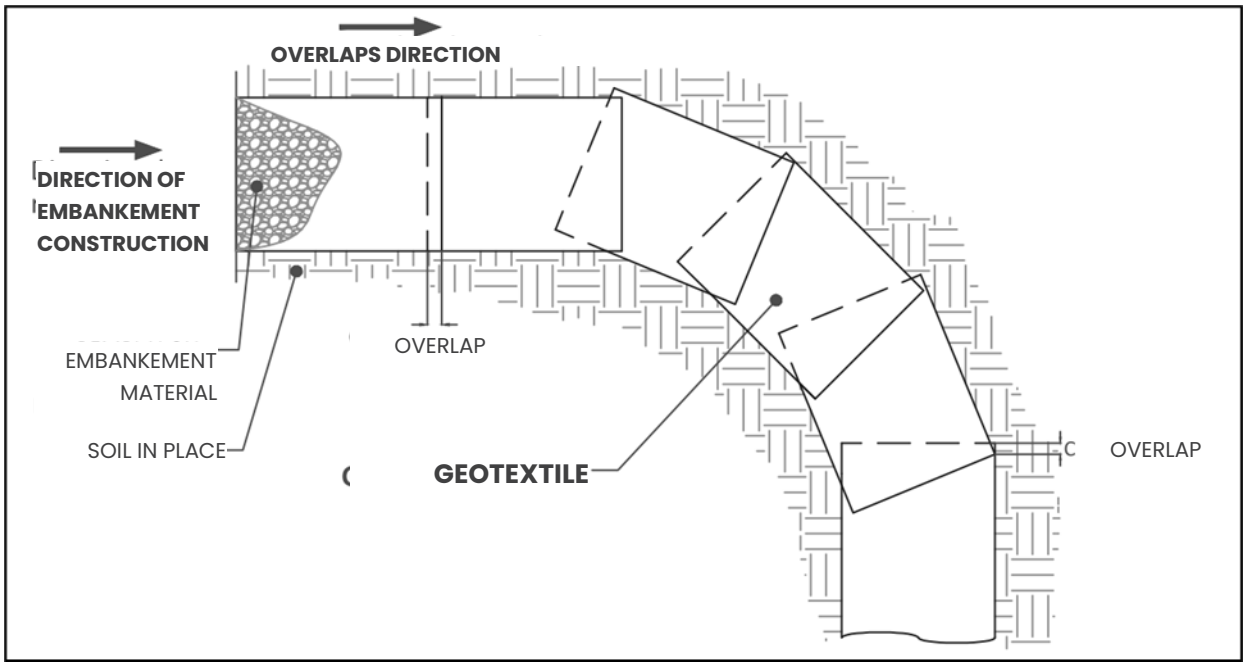


Figure 2 – Installation in a curve in the direction of the overlap

Repair Procedure

When repairs to a component under the geotextile is necessary, the latter will be cut by the excavator bucket during excavation. The geotextile must then be replaced with new material of

the same type. A minimum 450 mm overlap over the existing geotextile must cover the entire perimeter of the excavated area. The backfill must then be spread as described in section 3.4.

3.5.2 Vertical or Sloping Installation

Geotextiles used for this type of application can play one or more roles such as separation, filtration, drainage and protection.

Installation

The geotextile is unrolled from the top to the bottom of the slope, in direct contact with the soil without being stretched. It can be temporarily held in place with sandbags or other weights until it is backfilled. Sufficient excess must be left for final anchoring.

It is preferable for the geotextile to be installed in the downward direction of the slope (Figure 4). For ditches that are fully lined, horizontal overlaps on the banks should be avoided.

For retaining walls, geotextiles should be installed following the progression of the wall.

Figure 3 illustrates the installation of geotextile on a slope for a rock embankment using an unwinder:

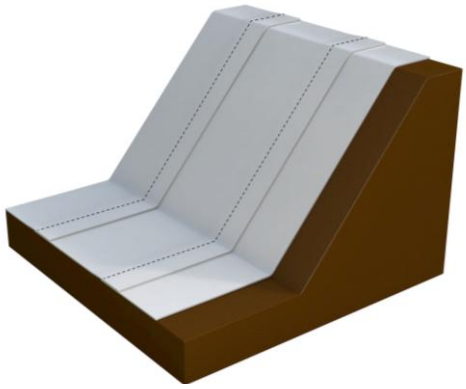


Figure 3 - Geotextile installation following the slope

Figure 4 – Geotextile installation on a slope using an unwinder

Anchoring

To prevent the geotextile from slipping, it can be held using weights or anchors. Figure 5 and figure 6 illustrate possible anchors to respectively use at the head and foot of the embankment.

For geomembrane protection, the geotextile must replicate the geomembrane's anchor profile.

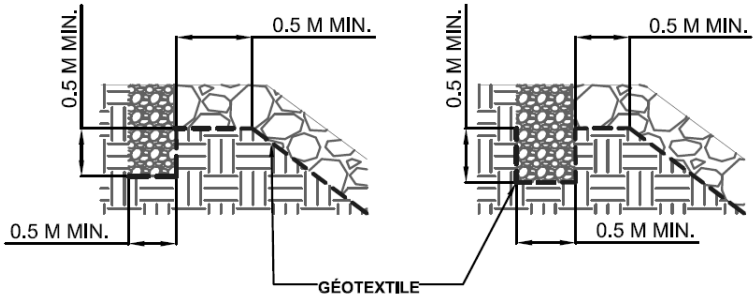


Figure 5 – Geotextile anchored at the top of the embankment

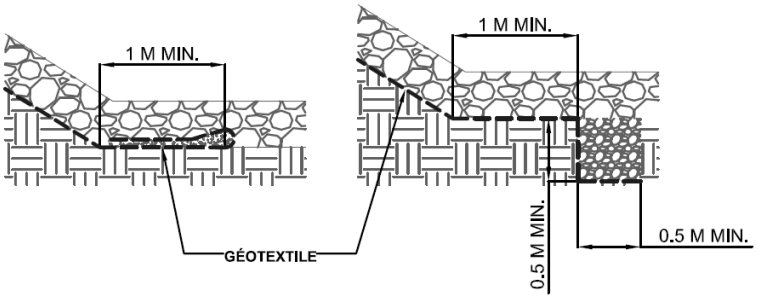


Figure 6 – Geotextile anchored at the bottom of the embankment

Chevauchement

Pour l'installation dans un canal, le chevauchement doit suivre le sens de l'écoulement de l'eau. Le chevauchement doit être entre 0,3 m et 1 m dépendamment des contraintes inhérentes au projet.

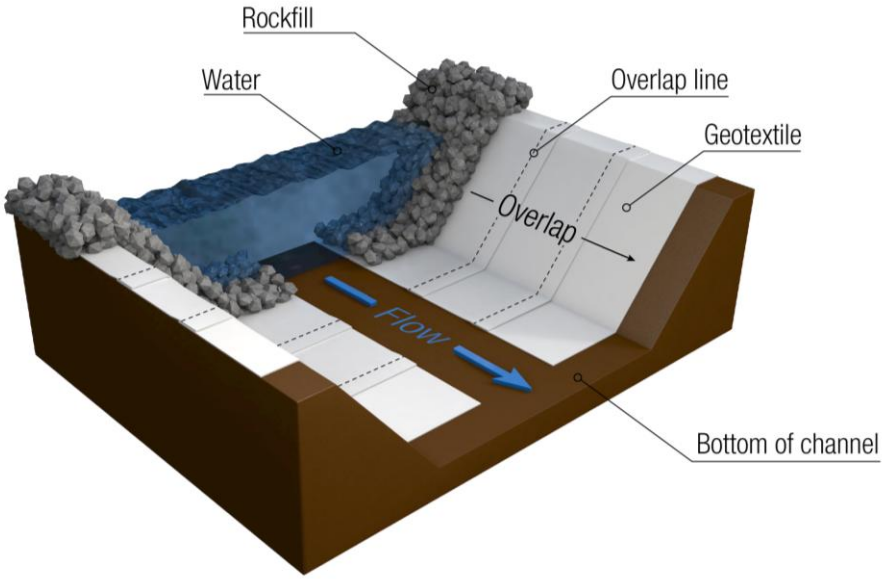


Figure 7 - Overlap in the direction of the water current

Backfilling

⚠	It is preferable to spread the backfill from the bottom of the slope to the top to reduce the mechanical stress on the geotextile.

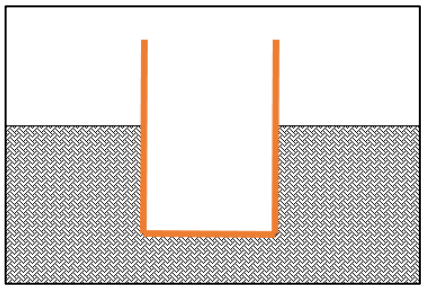
Special care must be taken during backfilling operations so as to not damage the geotextile with large rocks. The drop height and the angularity of the stones must be taken into consideration so as to not puncture the geotextile. A transition layer made from granular material may be necessary so as to minimize the geotextile puncture risk.

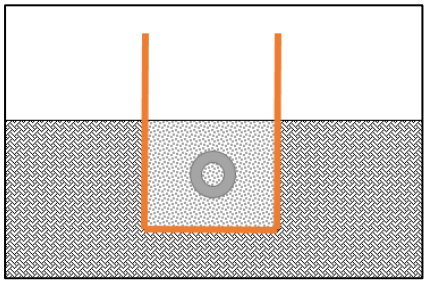
3.5.3 French Drains Installation

Geotextiles in French drains are effective for separation and filtration.

Installation, overlap, and backfilling

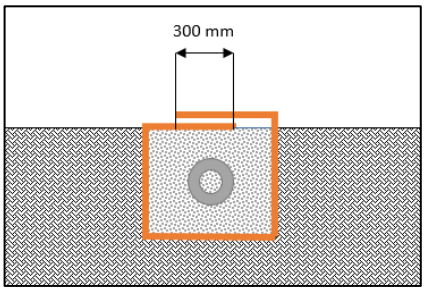
1) Dig the trench according to the planned dimensions and put the geotextile in place. Allow a sufficient length of geotextile to cover the necessary overlap.





2) Fill the trench with the drainage material and the perforated drain as required.

3) Secure the geotextile and the overlap, and backfill.



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WANT TO LEARN MORE?

Feel free to contact one of our representatives to discuss your project.
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