

EnkaDrain® Wide Landfills

Handling and installation guidelines

Product description

Drainage composites that consist of a polymer drainage core with a 3D monofilament V-shaped structure, which is stitched to protective- and/or filtration- geotextile on one (-1s) or both sides (-2s). The product has to be connected to a drainage collection pipe or any other outlet system.

Description of the application

EnkaDrain Wide's extensive range includes a large number of product types which are commonly used in waste containment projects for excess rainwater or leachate drainage and gas pressure relief. They can ensure a protection function, particularly over geomembranes. In case of use in veneer layer reinforcement, refer to installation manual "EnkaGrip"



Storage and handling

Roll dimensions (gross weight, length, width and diameter): see technical data sheet of the product.

Maximum allowed UV exposure of the product without its wrapping: see technical data sheet of the product.

EnkaDrain Wide is supplied in rolls on cardboard cores in a plastic wrapping. Wrapping must not be damaged during handling to prevent the product from UV degradation. Therefore, appropriate devices have to be used for unloading and handling of the rolls, e.g. spreader bars with a steel tube through the central core, or forklift devices with a central pin.

The rolls should be stored in the original wrapping horizontally on a dry, clean and even surface, they should not be stacked more than three rolls high to prevent the bottom rolls from getting oval which would make their installation less easy. Dragging of the mats after unrolling should be prevented. Smoking or open fires are not permitted when handling.



Use an appropriate device for unloading and handling of the rolls



Storage of maximum 3 rows height, on even and dry surfaces and in the original wrapping

Preliminary checking:

When applicable, the bearing capacity of the foundation soil has to fulfill the local requirements for the given application. Geometry of the project e.g. subgrade slope angle, drainage collection pipe spacing, anchorage length on top of the slope when needed, etc. has to be in accordance with the design data.

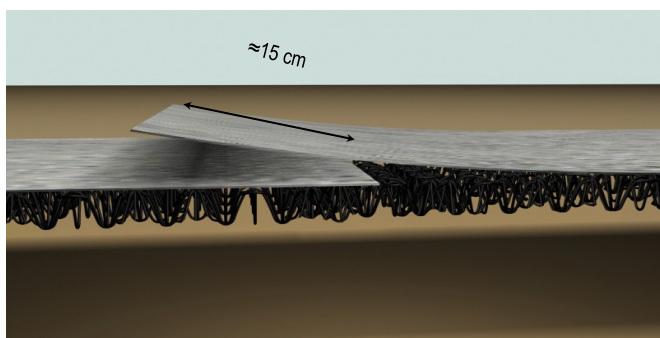
The underlying geosynthetic sealing system has to be in accordance with the design data. Interface characteristics of the geosynthetic sealing system should be involved in the requested level of performances of the delivered geocomposite.

The underground must be leveled. If needed, in case of subgrade material with high grain size, first install a sand layer to level the application surface. For capping, installation of a well compacted sub base/ leveling layer is recommended between waste and the sealing & draining system.

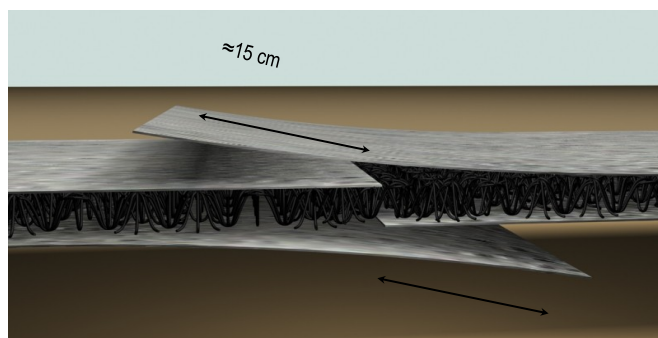
Product dimensions:

The dimensions mentioned on the technical data sheets are the dimensions of the drainage core. Fleeces are 15 cm wider than the drainage core to provide an overlap between lanes. EnkaDrain products must be installed core to core when possible. In this case, both fleece overlaps have to be unfolded for “-2s” EnkaDrain Wide type.

EnkaDrain Wide products can be installed as well with an overlap of 20 cm minimal of the drainage cores lateral, unfolding of the second fleece located underneath is not required anymore in this case for “-2s” EnkaDrain Wide type.



EnkaDrain geocomposite (-1s) with one fleece on one side only.



EnkaDrain geocomposite (-2s) with one fleece on the both sides.

Product installation

Prior to installation this laying guide should be studied on site together with the local personnel. All installation details should be reviewed thoroughly and a risk analysis completed for non-compliance of the laying guide instructions.

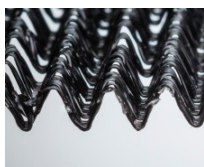
Unrolling

The roll should be supported by two men, one on each side of the roll, or mechanically with the aid of a spreader bar.

Cutting

Cutting tools: cutter, scissor

Mechanical damage from tools must be prevented. All staples present at the end of each roll securing it to the cardboard core must be removed prior to installation.



Laying direction

The V-shape cores provide higher performances in machine direction (i.e. channels direction); rolls should be laid perpendicularly to the altitude lines such that the channels direction follows the direction of water drainage flow.



The drainage core of EnkaDrain Wide with one fleece only “-1s” has to be faced to geomembrane, i.e. downwards for rainfall or leachate drainage and upwards for gas pressure relief.



On slopes, rolls must be unrolled with care from the top to the bottom of the slope.

It is recommended to place EnkaDrain Wide from the roll directly into its final position. Dragging the mats after unrolling could damage the product.

Fastening

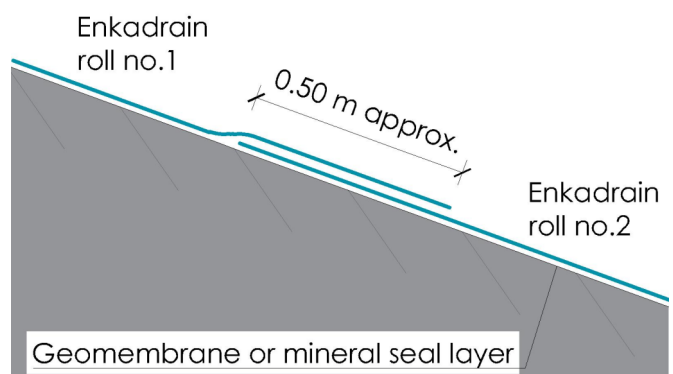
In order to prevent lanes and overlaps being displaced and opened by wind or traffic before placing backfill material, they should be covered or weighted with appropriate materials (heaps of soil, ballast bags). Fleeces might also be spot welded with a hot air welding device. Care should be taken here not to burn through the fleece! This should be done on the day of installation.



Connections

Extensions is allowed when EnkaDrain Wide is not involved in reinforcement.

The ends should not be butted but should overlap by approx. 0,5 meters to allow water to flow from one roll into the other. The end of the upper roll and the beginning of the lower situated roll should be installed “roof-tile-wise”(see picture). The drainage function is guaranteed in this way.

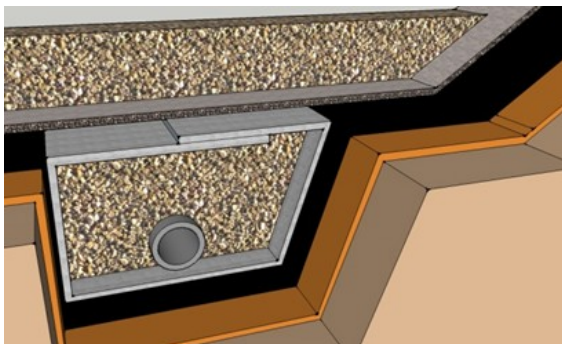


Safeguarding discharge at end-of-roll overlap and preventing soil intrusion

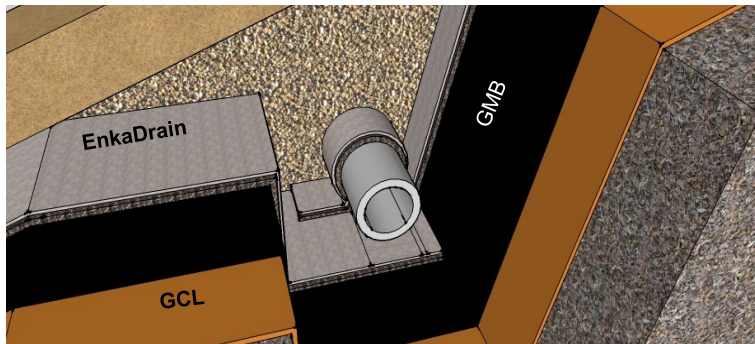
Connection to outlets

EnkaDrain Wide lanes are connected to interceptor- and collector-drain tubes for water or gas drainage at the crest and/or toe of the slope.

EnkaDrain Wide is usually laid over the draining trench (picture 1), wrapped in a nonwoven geotextile. EnkaDrain Wide can be installed wrapping the collector-drain (picture 2).



Picture 1: Example of connection at the toe by a draining trench.



Picture 2: Example of interceptor drains halfway a landfill slope. EnkaDrain Wide is wrapping the interceptor-drain.

The backfill material of the trench should not damage the sealing system. It is recommended that the maximum grain size doesn't exceed 50 mm.

Acceptance/Installation of backfill material:

Backfill material has to fulfill local rules for the considered application or specific requirements of the tender text. It has to allow at least water flow up to the EnkaDrain Wide, we can consider that's the case for soils with permeability $k_v > 5 \times 10^{-8}$ m/s. Therefore, clay is not allowed. For capping, the cover soil properties have to be in line with the requested shear resistances to guarantee slope stability.

Backfill material has to be placed in due time to cover the EnkaDrain Wide in accordance with the maximum allowed UV exposure of the product as mentioned on the technical data sheet. Equipment must not travel directly on any geosynthetic. Minimum cover layer thickness before driving on the product depends on the type of sealing system underneath and backfill material type, it is usually 50 cm for tracked vehicles and 100 cm for dumper lorries.

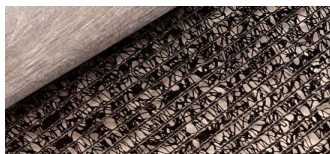


Under all circumstances topsoil should be spread out using suitable equipment, taking note of the direction of the overlaps, to avoid opening of the overlaps. In case of overlaps between rolls in length direction, specific care has to be taken locally to fasten the overlap.

No movement of EnkaDrain Wide is allowed while placing the top soil layer on top. On slopes, the soil cover must be pushed up the slope, to reduce the risk of folds in the geocomposite over smooth underlayer, this ensures as well that the soil is positioned on EnkaDrain Wide in a controlled way.

Backfilling and compaction (when relevant) have to be carried out in accordance with the local rules depending on the specific soil of the project.

Product picture



EnkaDrain® Wide

4 or 6 mm thick, consisting of a V-shaped drainage core stitched together with one or two geotextiles. 5 meters wide.

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