ENKADRAIN® WIDE

PRODUCT DESCRIPTION

Drainage composites consisting of a polymeric drainage core with a 3D monofilament V-shaped structure stitched to a filter geotextile on one side (-1s) or both sides (-2s). The product needs to be connected to a drainage collection pipe or any other outlet system.

EnkaDrain Wide's extensive range includes a large number of product types which are commonly used as draining layers to replace traditional drainage layers of granular materials. Examples are infrastructure projects for the drainage of excess rain- or groundwater (e.g. road embankments with or without consolidation of the subgrade (fig. 1), tramways (fig. 2)) or gas-pressure relief (e.g. water ponds). EnkaDrain Wide can also fulfil a protection function, particularly over/under geomembranes.

Storage and handling

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

EnkaDrain Wide is supplied in rolls on cardboard cores in a plastic wrapping. The wrapping must not be damaged during handling to prevent the product from UV degradation. Therefore, appropriate devices must be used for unloading and handling the rolls, e.g. spreader bars with a steel tube through the central core (fig. 3), or fork-lift devices with a central pole (fig. 4).

Maximum permissible UV-exposure of the product when unwrapped: see technical data sheet of the product.

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 being deformed to an oval shape which would make installation less easy (fig. 5).

Dragging of any geosynthetic after unrolling should be avoided, and smoking or open fires are not permitted when handling geosynthetics.

Fig. 1 – Drainage/Filtration under road embankment

Fig. 2 – Drainage/filtration on tramway platform

Fig. 3 – Appropriate devices must be used for unloading and handling the rolls

Fig. 4 – Handle with care. Use fork-lift device with a central pole to prevent damage

Fig. 5 – Store in original wrapping horizontally to a max of three rolls high.

PRODUCT INSTALLATION

Preliminary checking

When applicable, the bearing capacity of the foundation soil must fulfil the local requirements for the given application. Geometry of the project e.g. subgrade slope angle, drainage collection pipe spacing, etc. must be in accordance with the design data.

The underground must be levelled. The subsoil must be free of aggressive particles. If necessary, first install a sand layer to level the application surface. Sharp or broken stones with dimensions >75 mm should be avoided. If this is not possible, they should always be embedded in sand.

Product installation

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

Unrolling

The roll should be supported by two men, one on each side of the roll. If a machine is required, a spreader bar should be used.

Product dimensions

The dimensions given on the technical data sheets are the dimensions of the drainage core. Nonwoven filters are 15 cm wider than the drainage core to provide an overlap between rolls (fig. 6). The EnkaDrain cores must be butt jointed (core-to-core). In this case, both nonwoven overlaps must be unfolded for “-2s” EnkaDrain Wide type (fig. 7).

EnkaDrain Wide products can also be installed with an overlap of the drainage cores of at least 20 cm at the edges; unfolding of the second nonwoven on the lower face is no longer required in this case for the “-2s” EnkaDrain Wide type.

Cutting tools (cutter, scissors)

Mechanical damage by tools must be prevented.
All staples fixing the end of each roll to the cardboard core must be removed prior to installation.

Laying direction

The v-shape cores have a higher discharge capacity in machine direction (i.e. channel direction); rolls should be laid perpendicular to the drainage collection pipe(s) so that the channel direction is in the direction of water flow (fig. 8).

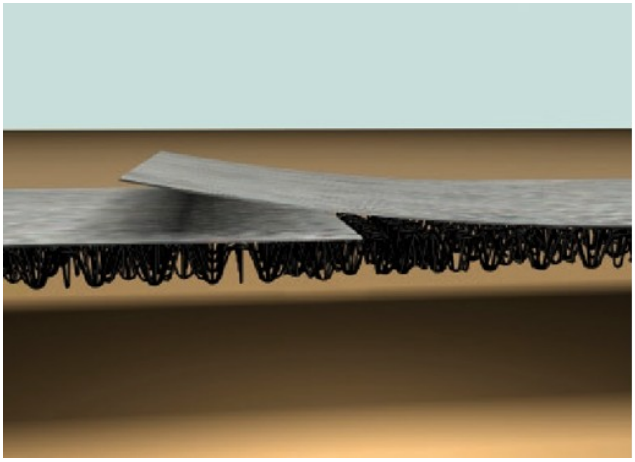

Fig. 6 – EnkaDrain geocomposite “-1s” with a nonwoven on one face only. Overlap approx. 15 cm

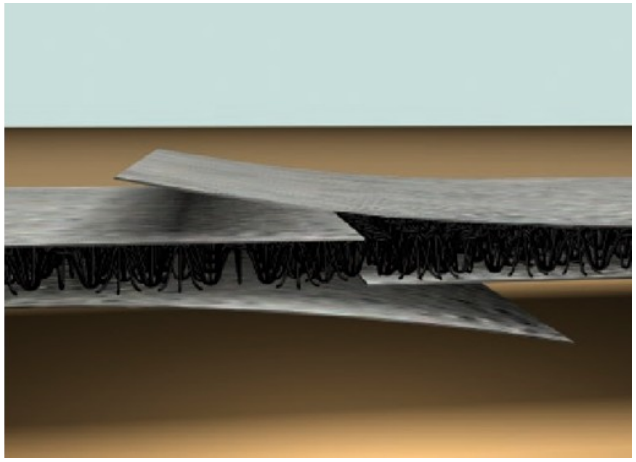

Fig. 7 – EnkaDrain geocomposite “-2s” with a nonwoven on both faces. Overlap approx. 15 cm

Fig. 8 – Lay rolls perpendicular to the drainage collection pipe(s). Channel direction = direction of water flow.

Fig. 9 – EnkaDrain Wide "-1s" laid on rigid material with its core downwards for rainfall drainage.

Fig. 10 – On slopes, rolls must be carefully unrolled from the top to the bottom of the slope.

The drainage core of EnkaDrain Wide with a single nonwoven "-1s" has to be laid on the rigid material (geomembrane, concrete, etc.), i.e. core downwards for rainfall drainage (fig. 9) and upwards for gas pressure relief.

It is recommended that EnkaDrain Wide be laid from the roll directly into its final position. Dragging the mats after unrolling can damage the product.

Fastening

In order to prevent rolls and overlaps being displaced and opened by wind or traffic before backfill material is placed, they should be covered or weighted with appropriate materials (heaps of soil (fig. 11), ballast bags). Nonwovens can also be spot-welded with a hot-air device (fig. 12).
Care should be taken here not to burn through the fabric! Welding should be carried out on the day of installation.

Connection between two rolls in length direction:

On flat surfaces, end jointing of rolls is permissible.
The roll ends should not be butt jointed, but should overlap by approx. 0,5 meters to allow water to flow from one roll into the next. The end of the upper roll and the beginning of the lower situated roll should be installed "roof-tile"-wise (fig. 13). This ensures the proper drainage function.

Connection to outlets

EnkaDrain Wide strips are connected to interceptor- and collector-drain tubes for water drainage or gas evacuation at the crest and/or toe of the slope.
EnkaDrain Wide is usually laid over the drainage trench (fig. 14) wrapped in a nonwoven geotextile.

Stopping EnkaDrain Wide near foundations

EnkaDrain Wide can be easily cut and positioned horizontally, even adjacent to existing building or retaining structures. When laid next to foundations and buildings, EnkaDrain should be folded upward vertically along the total height of backfill or tiles, or stopped immediately in front of foundations; the end of the strip is folded back
in both cases as shown in fig. 15.

Acceptance/Installation of backfill material

Backfill material has to fulfil local rules for the application in question, or specific requirements of the tender text.
It must be sufficiently permeable to allow water flow into the EnkaDrain Wide, and this will be the case for soils with a permeability kv > 5 x 10-8 m/s. Clay is therefore not allowed. Sharp or angular stones or blocks may damage the geo-composite and must therefore be removed.

Fig. 11 – Prevent rolls and overlaps being displaced and opened by wind or traffic. Cover or weigh down with appropriate materials (heaps of soil, ballast bags).

Fig. 12 – Spot-welding with a hot-air device.

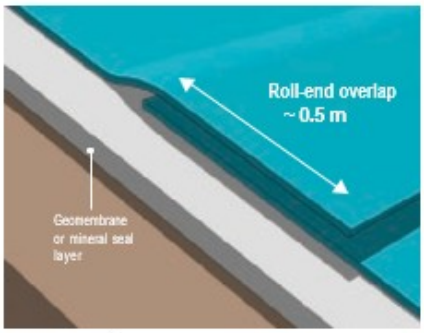

Fig. 13 / Safeguarding discharge at end-of-roll overlap and preventing soil intrusion (slope).

Fig. 14 / Example of connection with drainage trench. 1 EnkaDrain 2 Nonwoven geotextile

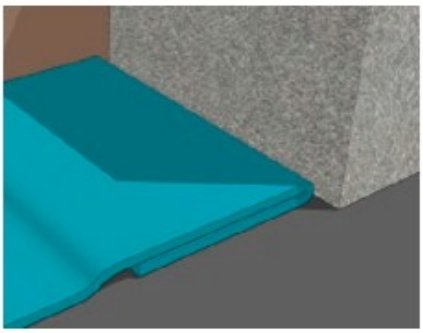

Fig. 15 / Adjacent to structures, the nonwoven overlap is folded back.

Backfill material must be placed in due time to cover the EnkaDrain Wide in accordance with the maximum allowed UV-exposure of the product as given on the technical data sheet.

Equipment must not directly traffic any geosynthetic. The minimum backfill thickness required for vehicled traffic depends on the type of backfill material and is usually 300 mm for tracked vehicles. A minimum cover of 500 to 700 mm (depending on local conditions) is required for wheeled construction equipment and dumper trucks on access roads in the total area. Fully loaded dumpers are only allowed to drive on access road with a sub-base thickness of at least 600 mm.

In all cases, topsoil should be spread out using suitable equipment, taking note of the direction of the overlaps to avoid opening these. In the case of overlaps between rolls in length direction, particular care must be taken locally to secure the overlap.

No movement of EnkaDrain Wide should be allowed when placing the topsoil layer. Backfilling and compaction (when relevant and in the case of well graded filling material only) must be carried out in accordance with local regulations depending on the specific conditions and requirements of the project.

Product used

EnkaDrain Wide
4 or 6 mm thick, , consisting of a V-shaped drainage core stitched to one or two geotex-

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