

INSTALLATION MANUAL

Bontexgeo Geo- & Combigrids

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Bontexgeo geogrids in earthworks applications

Bontexgeo geo- & combigrids are used in a variety of applications, including access roads to construction sites, roads and railways, work platforms, etc.

Product description

Abgrid are biaxial PP geogrids. Abgrid-NW/BS are combination geogrids consisting of an Abgrid and a PP non-woven geotextile. The manufacturing technology used for Abgrid and Abgrid-NW/BS has a significant impact on their effectiveness, as it ensures that the nodes are rigid and immovable, whilst the non-woven geotextile prevents the aggregate from shifting. The cross-section of the geogrid's ribs is rectangular, which effectively locks the aggregate in place (locking effect). The geotextile meets the requirements for use in separating, reinforcing and stabilising the soil. Also of paramount importance is the high strength of the nodes and of the non-woven geotextile, which provides sufficient strength and resistance to damage, particularly during compaction of the aggregate. The locking of the aggregate by the geocomposite is a key factor during the pre-compaction of the foundation, as well as for the subsequent behaviour of the structure throughout its service life. A high modulus of elasticity (stiffness of the geocomposite or geogrid) is regarded as the most important characteristic enabling effective restriction of aggregate movement and, consequently, effective reinforcement of the structure.

Areas of application, foreword

ABGRID & ABGRID-NW/BS geo- and combi-grids are designed for the reinforcement and stabilisation of aggregate structures. The use of these geogrids and geocomposites contributes, amongst other things, to:

1. reinforcing the weak subsoil of any embankments;
2. the construction of car parks in difficult ground conditions;
3. improving the stability of structures on weak subsoil;
4. reinforcement of road foundations to reduce the amount of aggregate required;
5. reinforcing railway foundations to reduce the amount of aggregate required;
6. construction of temporary roads in forests, fields and during the construction of wind farms.

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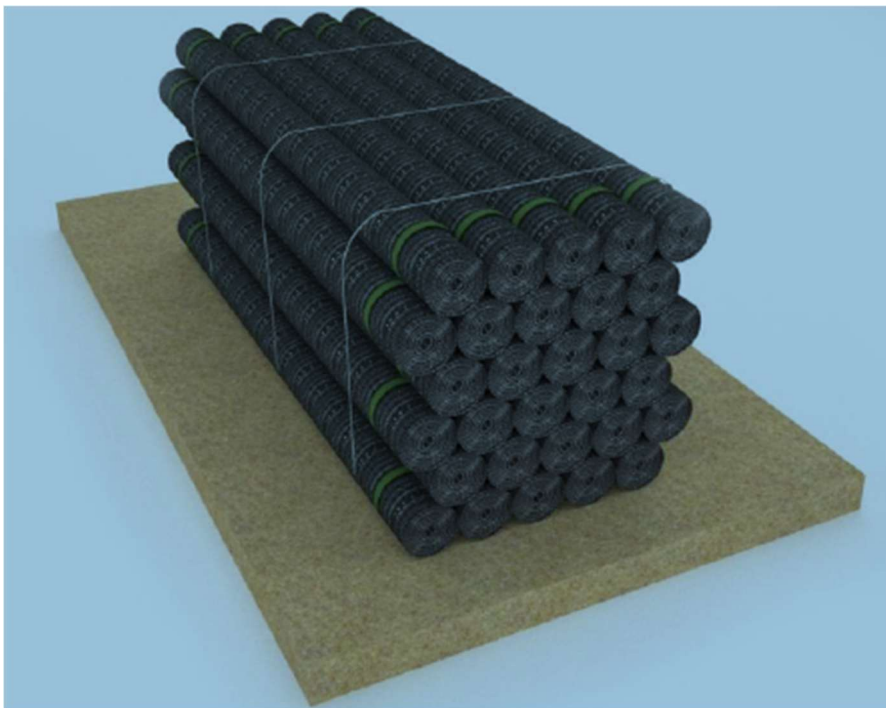
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Storage advice

Geo-&Combigrid rolls are protected against damage during transport and storage. It is recommended that Geo-&Combigrid be stored under the following conditions: in the dark to prevent excessive heating and UV exposure. Do not store the rolls vertically, as this may cause the edges of the Geo-&Combigrid to become distorted. When transporting Geo-&Combigrid to the worksite, they must be transported lying flat in a single layer to prevent the rolls from slipping on the loading vehicle. Each roll is fitted with a Geo-&Combigrid label containing basic information about the product. Geo-&combigrid must be covered within 30 days of installation. Otherwise, stored or installed rolls must be protected with an opaque tarpaulin.



Substrate preparation

The construction project must determine how the ground on which the Geo- or Combigrid is to be laid is to be prepared. In most applications, ground preparation involves manual levelling or mechanical clearance of any elements that could damage the Geo- or Combigrid, followed by compaction using a roller or vibratory compaction. For specific applications, the project involves specific ground preparation prior to the use of a geo- or combi-grid. Prior to the installation of the geo- or combi-grid, a plan must be drawn up detailing the layout and method of assembly, ensuring that it is not damaged during installation and that its functional integrity is not compromised. The installation plan must be drawn up before work commences. Its purpose is to define the positioning of each geo- or combi-grid on the substrate and the stacking sequence of the geo- or combi-grids. The plan must specify the overlap of the geo- or combi-grid, taking into account the direction of the fill material upwards, the gradient of the groundwater flow, the width of the strips, and how to join the geo- or combi-grid strips and secure them to the ground.

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Product installation

On a suitable and appropriately designed sub-base with a prepared surface, geo- or combi-grid is laid out in a direction parallel to the road (the overburden) or perpendicular to it, as specified by the construction project. Depending on their size and weight, geo- or combi-grid rolls can be carried and laid out by hand, or may require specific lifting equipment and means of transport. Lay out the geo- or combi-grid parallel to the road axis. Apply light pre-tension, both perpendicular and parallel to the longitudinal axis of the embankment, to prevent creasing. The effectiveness of the geogrid depends primarily on how the cross-anchoring is installed and the pre-tensioning. Geo- or combi-grids with rigid integrated nodes do not need to be pre-tensioned. If it is necessary to lay out the geo- or combi-grid over a large area, overlaps must be used.

Joints between sections of geogrid or combigrid, both longitudinal and transverse, must be installed with an overlap in width depending on the ground conditions; this means that for ground surfaces in groups G2 (CBR > 3 per cent) and G3 (CBR 1-3 per cent) and an aggregate layer up to 30 cm, the overlap must be at least 40 cm; for soil surfaces in Group G4 (< 1%) and an aggregate layer greater than 30 cm, the overlap must be at least 50 cm.

The overlap must be maintained during the installation of the aggregate layer on the geogrid or combigrid. This requirement is usually met by placing small cones locally along the aggregate overlap before the main activities relating to the laying of the aggregate layer commence. To prevent slippage, overlapping strips of geogrid or combi-grid must be used, secured to the ground with steel pins or staples (U-shaped), spaced at intervals of 4 to 5 m. Particular attention must be paid to the fixing of pins in the overlapping geogrid or combi-grid area and the adjacent slope zones. If necessary, geogrid or combigrid can be cut using a knife, scissors, pruning shears or a saw.

Specifically for Railways (NL):

Abgrid 30/30M products (certified to SPC00252-2)

& Abgrid 30/30M-BS24 & Abgrid 30/30M-BS32 (certified to SPC00252-3):

The subgrade must be cleared of sharp objects. When rolling out the geotextile, there must be no creases in the fabric. In the event of damage: see Installation damage & repair.

These products may only be used in combination with type 31.5/50 ballast.

For the installation of geo- and combi-grids with a chain mesh, all types may be used; these types are suitable for all sub-base types (sub-base sand and groundwater level at least 0.5 m below the underside of the ballast bed: $O_{90} \leq 200 \mu\text{m}$ or clay sub-base: $60 \mu\text{m} \leq O_{90} \leq 120 \mu\text{m}$).

With the universal method, only the Abgrid 30/30M-BS32 type can be used on all types of subsoil.

For detailed installation instructions, please refer to design specification OVS00056-5.1 (Track and Superstructure - Ballasted Track)

Cutting to length

The product can be cut to length using wire cutters or a grinding disc.

Installation damage & repair

Should the geo- or combi-grid become damaged during the placement of the ballast or through the use of heavy equipment, the following repair methods may be applied. First, the surrounding ballast must be removed.

In the event of major damage (> 50 cm) to the material (punctures/holes/tears/etc.), the damage must be removed across the full width of the geotextile. The two ends must then be joined with an overlap of at least 150 cm.

Minor damage (< 50 cm) can be repaired by placing a 100 x 100 cm piece of the same material at that point beneath the existing geotextile. Under no circumstances should weak or exposed areas remain visible, as this may lead to subsidence and/or intermingling of the two layers.

Disposal of waste products

A small amount of waste is produced with every roll of geotextile used. This may include packaging (PE), a plastic (HDPE) or cardboard tube, and possibly product residues (see labels for the type of raw material). We ask that you take the environment into account when disposing of this material.

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Summary

Improving the construction options for earthworks using geotextiles is a widely accepted, economical and environmentally friendly alternative to traditional construction solutions. In some areas, it has even become a standard construction method. However, it should not be forgotten that the installation of geotextiles requires a certain degree of care and that the standards and regulations for earthworks must be adhered to. These installation instructions can only cover the most important points. Should you have any questions regarding the above or related matters, we would be happy to assist you.

Product photo



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Geogrids for reinforcement and stabilisation, whether or not combined with geotextiles for protection, separation and filtration.

The information in this document reflects the best available knowledge at the time of publication. The document may be amended in light of new developments and findings. The same reservation applies to the properties of the products described. No liability is accepted for results obtained through the use of these products and/or information.

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