

# DuPont™ GroundGrid®

## A COST EFFECTIVE SOLUTION FOR SURFACE STABILISATION

### Installation guide

GroundGrid® is an innovative, three-dimensional and flexible geocell for use in ground stabilisation and confinement. When filled with gravel, soil, sand or other mineral infill, the honeycomb structure provides an ideal surface for landscape and construction projects such as driveways, paths, car parks, golf courses and artificial surfaced sports fields.

GroundGrid® is manufactured from non-woven geotextile strips that are thermo-welded into a cellular system. The high tensile strength of both the weld and geotextile provide an ideal structure that prevents infill from spreading thus preventing subsidence and rutting on medium to light trafficked surfaces. The loose infill material and the porosity value of the geotextile walls allow water penetration both vertically and horizontally making GroundGrid® the ideal choice for sustainable drainage applications. Supplied in a compressed concertina format for ease of storage and transport, GroundGrid® is simply extended on site. When fully extended, each grid covers an impressive 10 square metres (8m in length by 1.25 m wide).

#### Uses :

- Car parks
- Driveways
- Caravan sites
- Pathways
- Gravel landscaped areas
- Golf courses
- Sports fields

#### Benefits :

- Flexible material for terrain conformity
- Each grid covers 10m<sup>2</sup>
- Easy to transport and install
- Can be cut to size easily
- Water-permeability of cell walls

#### Sustainable Drainage Systems (SUDS) :

Drainage problems caused by the over use of hard, impermeable materials for roads, driveways and car parks has become a major problem, with an increase in flooding and environmental contamination with water runoff into rivers and groundwater. Sustainable Drainage Systems offer an alternative and long term way to manage surface water runoff. New legislative building regulations point the way forward to the use of porous systems (such as GroundGrid®) for rainwater management.



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## BEFORE YOU BEGIN

DuPont™ GroundGrid® is easy to install, but care must be taken to follow ALL of our rules to obtain a long lasting and stable surface. We recommend two people for installation.

- **Rule 1 :** Make sure the sub-base has adequate load bearing capacity, as this is not provided by the grid itself.
- **Rule 2 :** If you use GroundGrid® on a slight slope, fix the grid with pegs. Staple the grids together before filling when more than one grid is used.
- **Rule 3 :** Keep the grid in contact with the ground at all times during the installation to make sure no infill material migrates under the grid.
- **Rule 4 : Use only crushed angular aggregates/ stones/ gravel as shown in the below table "Recommended product per application".**
- **Rule 5 :** Always add a filling layer of gravel of 2 to 3 cm on the filled grid. This layer may consist of decorative gravel.
- **Rule 6 :** There will be a certain amount of initial settlement after first use, so the area must be kept topped up with aggregate during this time, and whenever the grid may become exposed.



### Cell size 55 mm

Angular aggregate typically graded in the range 10 to 14 mm + 20 mm of filling layer

### Cell size 110 mm

Angular aggregate typically graded in the range 20 to 40 mm + 30 mm of filling layer

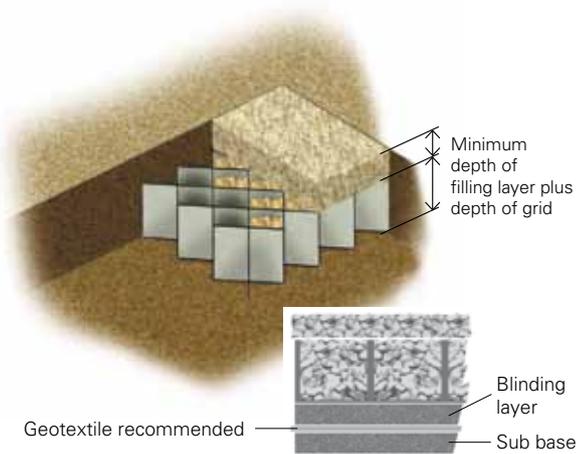
### Recommended product per application

	55/50	55/100	110/50	110/100
Driveways and patios	•	•		•
Footpaths / forest paths / bridle ways	•	•	•	•
Cycling lanes	•	•		
Horse boxes		•		•
Residential car parks and driveways	•	•		•
Golf cart paths	•	•		
Sloping pond edges	•		•	
Erosion prevention on slopes (angle < 20°)			•	
Erosion prevention on slopes (angle < 30°)	•	•		
Retaining wall height < 2 m		•		•

## 1. PREPARING THE GROUND



- The ground must have an adequate sub base to support the projected traffic. (See table next page)
- The grid itself does not have a load bearing capacity; this is created by the sub base.
- The ground must be dug out to a depth of 70-80 mm. This will allow for the grid height 50 mm plus a 20-30 mm aggregate filling layer (respectively 120 -130 mm for grid height 100 mm)
- If the sub base is soft then prior to laying the grid use a Typar® geotextile and an MOT type 1 (or equivalent material) of the required thickness to strengthen the sub base (according to the table on the next page)
- Use a wacker to stabilise and strengthen the area.
- If the sub base is already stable enough to take traffic, remove all large stones and irregularities in the ground.



Application / Load	Typical sub-base thickness in cm
Occasional heavy traffic	from 15 cm to 50 cm
Light traffic	from 10 cm to 40 cm
Public paths/bridleways	from 5 cm to 15 cm
Domestic garden paths	from 5 cm to 12 cm

The above data is indicative only and should not be utilised without the sub-base design being verified by a qualified engineer taking into account site-specific criteria.

## 2. LAYING THE GRID

- Take one panel of grid and use temporary pegging to hold one end.
- Pull the grid out to its maximum length of 8 m; this will reduce the width from 1,65 m to 1,25 m. Do not overextend.
- DuPont™ GroundGrid® can be easily cut to shape or size with a cutter or scissors if the full panel of 10 m<sup>2</sup> is not required.
- Lay the next grid in the same way adjacent to the first, this time staple each of the open cell edges together to create a single panel out of the two grids.
- Do not walk on the grid at this stage; walk only on timber boards placed on the grid.
- If you're on a slope, fix the grid at regular intervals on the ground with pegs.



## 3. FILLING THE GRID

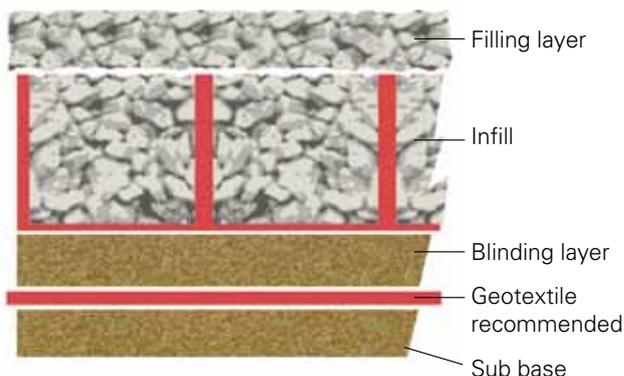
- You must not stand on the empty grid itself until completely filled.
- Fill each end of the grid with a handful of aggregate to hold it in place.
- The grid has to be in constant contact with the ground when putting aggregate into the cells, use a timber board on top of the grid to ensure contact is made.
- Once the ends have been filled you may remove the temporary pegging or push them completely into the ground for improved stability.
- The grid can be filled manually or mechanically. If filled mechanically do not drop the aggregate from more than 50 cm height from the ground.



**IMPORTANT : Only crushed, angular infill must be used to fill the cells.**



- Rake the aggregate into the cells so that they are filled to the top.
- Once the area has been completed and the cells are filled to the top of the grid, a filling layer must be applied before trafficking. This should be approximately 20-30 mm in depth so that the grid is completely covered.
- When the filling layer has been applied, the area can be trafficked. There will be a certain amount of initial settlement, so the area must be kept topped up with aggregate during this time, and whenever the grid may become exposed.



## TECHNICAL DATA

### Nonwoven fabric

Properties	Standard	Unit	55/50 and 55/100	110/50 and 110/100
Mass per unit area	EN ISO 9864	g/m <sup>2</sup>	190	290
Thickness 2kN/m <sup>2</sup>	EN ISO 9863-1	mm	0,54	0,75
Tensile strength	EN ISO 10319	kN/m	13	21
Elongation	EN ISO 10319	%	55	55
Apparent opening size O <sub>90w</sub>	EN ISO 12956	µm	80	70
Water permeability V <sub>I</sub> <sub>H50</sub>	EN ISO 11058	mm/s	35	15

*These values are nominal values recorded in our laboratories and by independent institutes and are indicative.*

### Product range

Cell size in mm (Ø/height)	Nonwoven fabric	Grid area	Grid weight	Per pallet*
55/50	190 g/m <sup>2</sup>	1,25 m x 8 m (10 m <sup>2</sup> )	4,7 kg	1000 m <sup>2</sup>
55/100			9,5 kg	500 m <sup>2</sup>
110/50	290 g/m <sup>2</sup>	1,25 m x 8 m (10 m <sup>2</sup> )	3,5 kg	1000 m <sup>2</sup>
110/100			6,9 kg	500 m <sup>2</sup>

\* Pallet size: 1.65 m x 0.9 m x height 1 - 1.35 m

Recommendations as to methods, use of materials and construction details are based on the experience and current knowledge of DuPont and are given in good faith as a general guide to designers, contractors and manufacturers. This information is not intended to substitute for any testings you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience becomes available since we cannot anticipate all variations in actual end-use conditions. DuPont makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a licence to operate under a recommendation to infringe any patent right.

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