

DELTA[®] System

DELTA[®] protects property. Saves energy. Creates comfort.

DÖRKEN

DELTA[®]-NP DRAIN

**Keeps its shape perfectly
even under high pressure!**

Compact two-ply composite sheet.
High drainage capacity through
specially-configured dimples.



PREMIUM QUALITY

■ Protection
and drainage
system

■ For building,
underground, and
civil-engineering
construction

■ For vertical
and horizontal
installation

Top safety in vertical and horizontal applications:
DELTA®System – naturally!



■ **DELTA®-NP DRAIN**

With its high compressive strength, this drainage and waterproofing system solves every problem: Whether installed vertically or horizontally, DELTA®-NP-DRAIN sheets guarantee maximum safety in damp proofing applications.

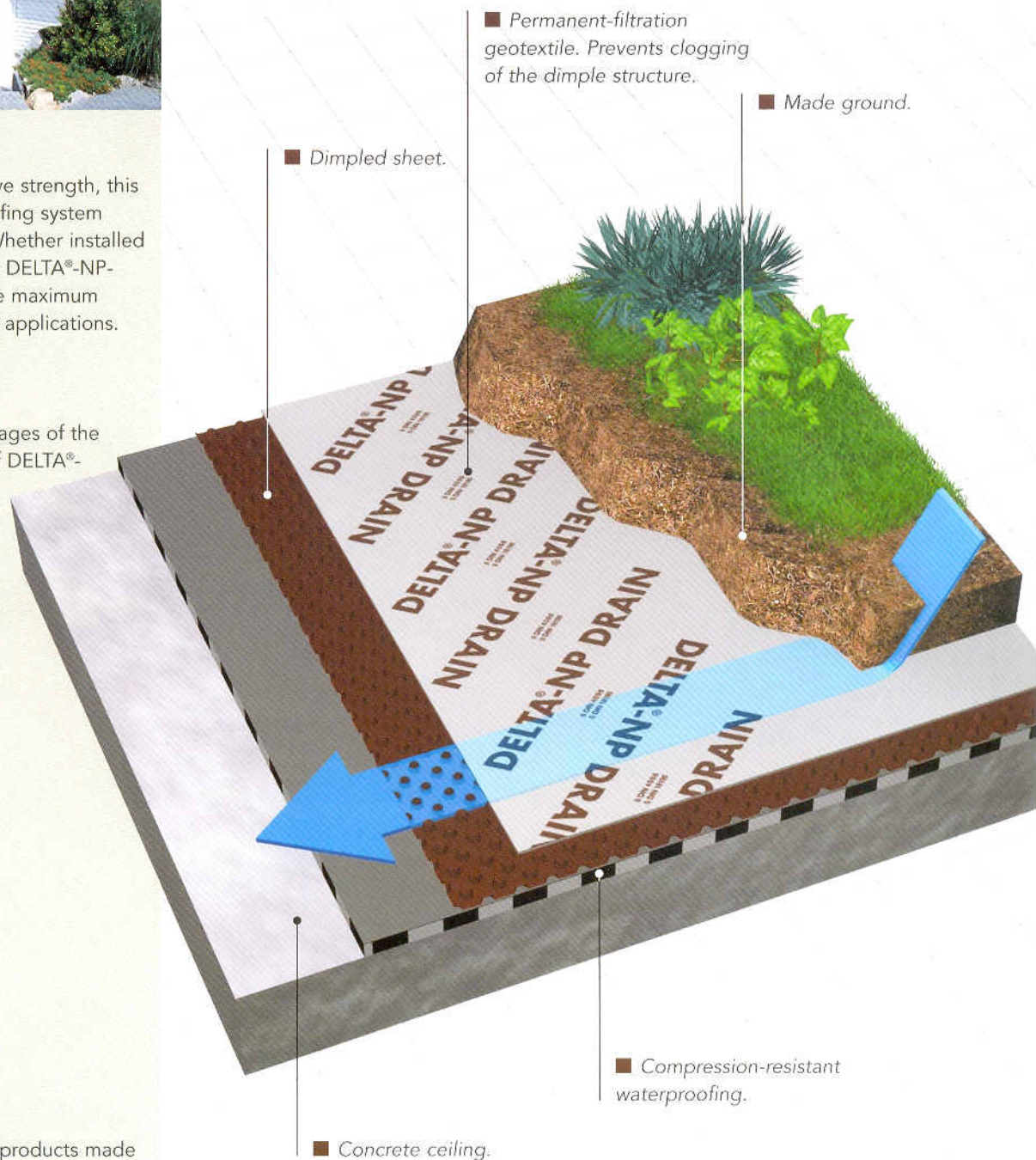
■ **DELTA®-Accessories**

Why not use the advantages of the comprehensive range of DELTA®-Accessories:
DELTA®-NOPPEN-BAHNEN-PROFIL,
DELTA®-HAFTNAGEL
and DELTA®-MS DÜBEL.

Better safe than sorry:

DELTA®-NP DRAIN

Constant water drainage. Rot-



DELTA® quality branded products made by Dörken.



Reliable vertical and horizontal drainage in civil engineering.

Non-deformable, impact-resistant sheets.

High compression resistance even under high loads.

proof. Cost-efficient installation.

DELTA®-NP DRAIN ...

- ... consists of a dimpled sheet with a high compressive strength of approx. 150 kN/m² and a special geotextile.
- ... offers dependable vertical and horizontal drainage in civil-engineering buildings, retaining walls of all kinds, open tunnels, and underground parking lots.
- ... protects garden roofs over underground parking lots and green parking decks from moisture. The dimpled sheet prevents water logging and offers greater protection from root penetration. Because of its high compressive strength, the material will bear the weight of a man easily.
- ... features a geotextile layer which filters out fine soil particles, thus ensuring a constant flow of water down to the drainage pipe.
- ... is rot-proof, impact-resistant, and non-deformable.
- ... consistently relieves hydrostatic pressure on the waterproofing layer.
- ... features a high drainage capacity.
- ... may be installed easily and cost-efficiently thanks to its flat edge.
- ... awarded the "Avis Technique du CSTB n° 7/03-1367" test certificate.
- ... awarded the CE 0799-CPD-13 seal and conforms to the requirements of DIN EN 13252.



DELTA®-NP DRAIN for easy, fast, and cost-efficient installation.



Important Information for Horizontal Applications.

When integrated in soil-covered ceilings, consideration should be given to the following gradient and drainage-rate characteristics, which apply under a load of 20 kN/m²:

Gradient	Drainage Rate	Drainage Length
2 %	0,15 l/(s · m)	16 m
3 %	0,20 l/(s · m)	22 m

After laying, the sheet will bear the weight of a wheelbarrow easily when uncovered, and that of a wheeled loader when covered

Minimum surfacing thickness required to support vehicles:

Vehicle Type	Surfacing Thickness
Passenger cars	≥ 15 CM
Trucks 3/3	≥ 15 CM
Trucks 6/6	≥ 25 CM
Trucks 9/9	≥ 35 CM
Trucks 12/12	≥ 40 CM
Trucks 16/16	≥ 45 CM
Heavy trucks 30	≥ 45 CM
Heavy trucks 60	≥ 65 CM

Please note: Where heavier loads are involved, please contact our engineering

DELTA®-NP DRAIN

Technical Data Overview:

Dimpled sheet material	HD-PE
Geotextile material	Polypropylene
Dimple height	approx. 8 mm
Compressive strength	approx. 150 kN/m ²
Drainage rate	approx. 2.25 l/s · m
Service temperature range	-30°C to +80°C
Roll length	12.50 m
Roll width	2.0 m

DELTA®-Accessories for DELTA®-NP DRAIN.

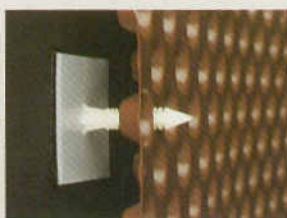
Dörken makes your life easier – systematically.

You are sure to appreciate these handy DELTA®-Accessories:



DELTA®-NOPPENBAHNEN-PROFIL

Edge sealing strip.



DELTA®-HAFTNAGEL

Self-adhesive pin aids installation.



DELTA®-MS DÜBEL

Plastic nail plug for attaching sheets to very hard masonry.

DELTA® is a registered trademark of Ewald Dörken AG, Herdecke, Germany.

DELTA®



DELTA® System ...

... for owners:

" ... What I get is a mature problem solution provided at a fair price by the top specialist in quality branded products!"

... for workers:

" ... What I get is a complete system made by a single manufacturer that enables me to do anything to the owner's entire satisfaction. There is no safer way!"

... for planners:

" ... I can be certain that both innovative and standard products will be used in implementing my roof and cellar plans in a systematic and forward-looking way."

DÖRKEN

Dörken GmbH & Co. KG
Wetterstraße 58
D-58313 Herdecke
Tel.: +49 23 30/63-0
Fax: +49 23 30/63-355
bvf@doerken.de
www.doerken.de

A company of the Dörken Group.

■ Standard requests for tender and detailed installation instructions for all DELTA® products may be obtained from www.doerken.de as PDF files for you to print out and save.

550282 11.06 WW 2

DELTA[®]-NP DRAIN

Installation Instructions

Vertical Application

- 1. If the waterproof coating is 1.9 m high, apply the sheet horizontally straight from the roll and trim it to size as required. On higher walls, apply the sheet vertically from top to bottom. Use a carpet knife to cut the sheet to the requisite length across the roll.
- 2. The permanent-filtration geotextile should always face the soil. If the exact level of the ground surface is not known, attach the sheets above the upper edge of the waterproof layer, making sure that they reach about 10 cm higher than the waterproofing itself. After backfilling, trim the sheets in parallel with the surface of the soil. At the bottom, sheets end atop the drainpipe, which should be surrounded on all sides with a layer of permanent-filtration material at least 15 cm thick.

- 3. For easy overlapping, each sheet features an undimpled strip approx. 14 cm wide along one edge. Lift up the geotextile and push the next sheet underneath it. To lengthen a vertically-installed sheet, push the next sheet underneath for a minimum length of 20 cm. Connect the two with no less than 4 DELTA[®]-HAFTNAGEL adhesive pins. Fix the separating foil to the glue of the DELTA[®]-HAFTNAGEL pins.
- 4. Before attaching a sheet to an outside corner, crease it along the line of the edge. Place plastic light wells directly on top of the sheet. Window openings can be cut out later. When light wells have already been installed, cut the sheet precisely along their lower edge and make one vertical cut in the middle.

Horizontal Application

- 1. Clean surfaces thoroughly to avoid damage to the waterproofing or drainage system after the drainage sheet has been laid.
- 2. Lay the sheet straight from the roll on top of the substrate or the waterproofing, with the geotextile pointing upwards. Cut sheets to length with a carpet knife.
- 3. For easy overlapping, each sheet features an undimpled strip approx. 14 cm wide along one edge. Lift up the geotextile and push the next sheet underneath it. To lengthen a horizontally-installed sheet, push the next sheet underneath for a minimum length of 20 cm. Connect the two with no less than 4 DELTA[®]-HAFTNAGEL adhesive pins.
- 4. When integrated in an earth-covered ceiling, installed drainage sheets will easily bear the weight of a wheelbarrow. Wheeled loaders are safe if the surfacing is no less than 40 cm thick.