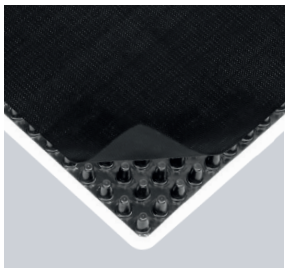
TECHNICAL DATA SHEET

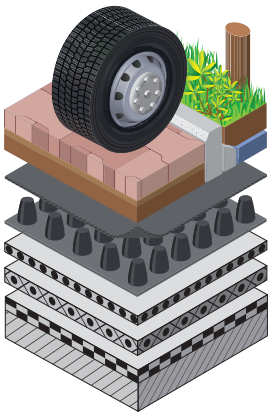
ND 620hd Drainage System



ND 620hd Drainage System

High-performance CE-marked drainage system with an innovative dimple design made out of recycled high impact polystyrene. The core of the ND Drainage System is a dimpled sheet with an extremely high compressive strength, an excellent creep resistance guaranteeing a consistent long term drainage capacity and a construction height of approx. 12.5 mm. A special mono-filament woven geotextile is bonded to each dimple as a filter layer.

The geotextile is glued and not thermally bonded to the dimpled core to avoid damage to the mechanical and hydraulic properties of the geotextile and the drainage system. It also prevents the geotextile to be pushed in between the dimples obstructing the drainage capacity. A pressure-dividing slip film is glued to the back of the dimpled sheet and acts as the first smooth, non-sticky surface of the slip layer and as an additional protection layer of the waterproofing membrane.



Composition Nophadrain Intensive Green Roof System

Application

The ND 620hd Drainage System is a component of the Nophadrain Parking Deck System – heavy goods vehicles that acts as a filter, drainage and protection layer.

Technical specifications

- Material dimpled sheet: recycled high impact polystyrene (HIPS)
- Material woven geotextile filter: polypropylene (PP)
- Material pressure-dividing slip film: polypropylene (PP)
- Construction height: approx. 12.5 mm
- Compressive strength: approx. 1,200 kPa
- Weight: approx. 1,364 g/m²
- Drainage capacity at i = 1 at 20 kPa: approx. 5.44 l/(s.m)
- Drainage capacity at fall ratio 2 % at 20 kPa: approx. 0.68 l/(s.m)
- Test: performance test at the Technical University Munich (D) - assessment of the performance and behaviour of a pavement structure under simulated traffic conditions.

Product	Dimensions (L x W)	Packaging
ND 620hd Drainage System	approx. 32 x 1.25 m	approx. 40 m², roll

NOPHADRAIN®
SMART GREEN ROOF SYSTEMS

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Data sheet	DoP620hd-004	ND 620hd	
Material Properties	**Standard**	**Unit**	**Performance**
Core	-	-	HIPS
Filter geotextile	-	-	PP-weefsel
Separation film	-	-	PP
Separation geotextile	-	-	-
Mechanical Properties (mean values)			
Compressive strength	hEN ISO 25619-2	kPa	1200
Tensile strength* (MD/CMD)**	hEN ISO 10319	kN/m	45/27
CBR puncture resistance*	hEN ISO 12236	kN	5.0
Dynamic performation (cone drop)	hEN ISO 13433	mm	7.5
Resistance to weathering***	hEN ISO 12224	%	60/80
Physical Properties			
Construction height at 2 kPa	-	mm	12.5
Dimple height at 2 kPa	-	mm	12.0
Perforations per m²	-	-	-
Diameter perforations	-	mm	-
Water reservoir	-	l/m²	-
Material dimensions (L x W)	-	m	32 x 1.25
Mass per unit area	-	g	1364
Surface area per roll	-	m²	40.0
Roll diameter	-	cm	75.0
Roll weight	-	kg	54.5
Hydraulic Properties (mean values)			
Opening size O_{90}*	hEN ISO 12956	µm	150
Water permeability H_{50}*	hEN ISO 11058	mm/s	15
Drainage Capacity (mean values)**			
Vertical drainage / Wall - gradient i=1			
Surface load **Build-in-depth**			
20 kPa 2.0 m	hEN ISO 12958	l/(s.m)	5.44
30 kPa 3.0 m	hEN ISO 12958	l/(s.m)	5.41
50 kPa 5.0 m	hEN ISO 12958	l/(s.m)	5.18
100 kPa 10.0 m	hEN ISO 12958	l/(s.m)	4.26
200 kPa Exceptional	hEN ISO 12958	l/(s.m)	3.77
Horizontal drainage / Roof			
Fall = 0 % - Exceptional case***			
≤ 2 kPa - extensive green roof	FH Karlsruhe (D)	l/(s.m)	-
≤ 10 kPa - intensive green roof	FH Karlsruhe (D)	l/(s.m)	-
Fall = 1 % - Exceptional case			
≤ 10 kPa - extensive green roof	hEN ISO 12958	l/(s.m)	0.62
≤ 20 kPa - intensive green roof	hEN ISO 12958	l/(s.m)	0.51
100 kPa - podium roof deck	hEN ISO 12958	l/(s.m)	0.36
200 kPa - parking roof deck	hEN ISO 12958	l/(s.m)	0.36
Fall = 1.5 %			
≤ 10 kPa - extensive green roof	hEN ISO 12958	l/(s.m)	0.69
≤ 20 kPa - intensive green roof	hEN ISO 12958	l/(s.m)	0.64
100 kPa - podium roof deck	hEN ISO 12958	l/(s.m)	0.38
200 kPa - parking roof deck	hEN ISO 12958	l/(s.m)	0.37
Fall = 2 %			
≤ 10 kPa - extensive green roof	hEN ISO 12958	l/(s.m)	0.79
≤ 20 kPa - intensive green roof	hEN ISO 12958	l/(s.m)	0.68
100 kPa - podium roof deck	hEN ISO 12958	l/(s.m)	0.52
200 kPa - parking roof deck	hEN ISO 12958	l/(s.m)	0.51
Fall = 2.5 %			
≤ 10 kPa - extensive green roof	hEN ISO 12958	l/(s.m)	0.85
≤ 20 kPa - intensive green roof	hEN ISO 12958	l/(s.m)	0.78
100 kPa - podium roof deck	hEN ISO 12958	l/(s.m)	0.53
200 kPa - parking roof deck	hEN ISO 12958	l/(s.m)	0.52
Fall = 3 %			
≤ 10 kPa - extensive green roof	hEN ISO 12958	l/(s.m)	0.95
≤ 20 kPa - intensive green roof	hEN ISO 12958	l/(s.m)	0.81
100 kPa - podium roof deck	hEN ISO 12958	l/(s.m)	0.62
200 kPa - parking roof deck	hEN ISO 12958	l/(s.m)	0.59

* Performance expressed of the filter/geotextile only
** MD = Machine direction / CMD = Cross Machine Direction
*** Material has to be completely covered within 14 days after installation
**** hEN ISO 12958 tested hard/soft
***** FH Karlsruhe (D) tested hard/hard

The values correspond to average results obtained in our laboratories and outside institutes and are indicative. The right is reserved to make changes at any time without notice.
Standard variations in mechanical properties of 15 % and in hydraulic properties of 20 % and in physical properties of 2 % are normal.

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