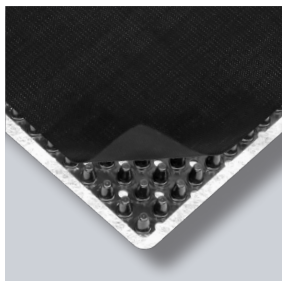


TECHNICAL DATA SHEET

ND 600hdsv Drainage System



ND 600hdsv 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 perforated, vapour-permeable dimpled sheet with an extremely high compressive strength (1,200 kPa), an excellent creep resistance guaranteeing a consistent long term drainage capacity and a construction height of approx. 13 mm.

A special mono-filament woven geotextile is bonded to each dimple as a filter layer. A vapour-permeable geotextile is glued to the back of the dimpled sheet as a separation and protection layer of the XPS insulation panels. The geotextiles are 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.

Application

The ND 600hdsv Drainage System is a component of the Nophadrain Parking Deck System – heavy goods vehicles that acts as a filter, drainage and protection layer on an inverted roof construction.

Properties

- Material dimpled sheet: recycled high impact polystyrene (HIPS)
- Material woven geotextile filter: polypropylene (PP)
- Material vapour-permeable geotextile: polypropylene (PP)
- Construction height: approx. 13 mm
- Compressive strength: approx. 1,200 kPa (deformation at 1 mPa = 9 %)
- Perforations/m²: approx. 1,540 / ø 6.3 mm
- Weight: approx. 1,476 g/m²
- Drainage capacity at i = 1 at 20 kPa: approx. 5.36 l/(s.m)
- Drainage capacity at fall ratio 2 % at 20 kPa: approx. 0.74 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 600hdsv Drainage System	approx. 32 x 1.25 m	approx. 40 m ² , roll

Data sheet

DoP600hdsv-008

ND 600hdsv

Material Properties	Standard	Unit	Performance	
Core	-	-	HIPS	
Filter geotextile	-	-	PP(woven)	
Separation film	-	-	-	
Separation geotextile	-	-	PP	
Mechanical Properties (mean values)				
Compressive strength	hEN ISO 25619-2	kPa	1,200	
Compressive strength at 10 % deformation	hEN ISO 25619-2	kPa	1,000	
Deformation at 1 mPa	hEN ISO 25619-2	%	9	
Tensile strength ¹ (MD/CMD) ²	hEN ISO 10319	kN/m	50/40	
CBR puncture resistance ¹	hEN ISO 12236	kN	5	
Dynamic performance (cone drop)	hEN ISO 13433	mm	11	
Resistance to weathering ³	hEN ISO 12224	%	60/80	
Physical Properties				
Construction height at 2 kPa	-	mm	13	
Dimple height at 2 kPa	-	mm	12	
Perforations per m²	-	-	1,540	
Diameter perforations	-	mm	6.3	
Water reservoir	-	l/m²	-	
Material dimensions (L x W)	-	m	32 x 1.25	
Mass per unit area	-	g	1,476	
Surface area per roll	-	m²	40	
Roll diameter	-	cm	75	
Roll weight	-	kg	59	
Hydraulic Properties (mean values)				
Opening size O ₉₀ ¹	hEN ISO 12956	µm	180	
Water permeability H ₅₀ ¹	hEN ISO 11058	mm/s	40	
Drainage Capacity (mean values)				
Vertical drainage / Wall - gradient i=1				
Surface load	Build-in-depth			
20 kPa	2.0 m	hEN ISO 12958 ⁴	l/(s.m)	5.36
30 kPa	3.0 m	hEN ISO 12958 ⁴	l/(s.m)	5.26
50 kPa	5.0 m	hEN ISO 12958 ⁴	l/(s.m)	4.97
100 kPa	10.0 m	hEN ISO 12958 ⁴	l/(s.m)	4.47
200 kPa	Exceptional	hEN ISO 12958 ⁴	l/(s.m)	3.86
Horizontal drainage / Roof				
Fall = 0 % - Exceptional case				
≤ 2 kPa - extensive green roof	FH Karlsruhe (D) ⁵	l/(s.m)	-	
≤ 10 kPa - intensive green roof	FH Karlsruhe (D) ⁵	l/(s.m)	-	
Fall = 1 % - Exceptional case				
≤ 10 kPa - extensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.56	
≤ 20 kPa - intensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.51	
100 kPa - podium roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.39	
200 kPa - parking roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.32	
Fall = 1.5 %				
≤ 10 kPa - extensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.71	
≤ 20 kPa - intensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.64	
100 kPa - podium roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.49	
200 kPa - parking roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.42	
Fall = 2 %				
≤ 10 kPa - extensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.79	
≤ 20 kPa - intensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.74	
100 kPa - podium roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.57	
200 kPa - parking roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.47	
Fall = 2.5 %				
≤ 10 kPa - extensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.86	
≤ 20 kPa - intensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.84	
100 kPa - podium roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.62	
200 kPa - parking roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.51	
Fall = 3 %				
≤ 10 kPa - extensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.95	
≤ 20 kPa - intensive green roof	hEN ISO 12958 ⁴	l/(s.m)	0.94	
100 kPa - podium roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.74	
200 kPa - parking roof deck	hEN ISO 12958 ⁴	l/(s.m)	0.57	

¹ Performance expressed of the filter/geotextile only

² MD = Machine direction / CMD = Cross Machine Direction

³ Material has to be completely covered within 14 days after installation

⁴ hEN ISO 12958 tested hard/soft

⁵ 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 5 % are normal.

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