



# MANUFACTURER OF Geocomposites and geomembranes Caalogue of products



[www.plastmaster.pl](http://www.plastmaster.pl)

***Ladies and gentlemen!***

*We are a manufacturer of geomembranes such as foundation membranes, membranes for horizontal insulation, and geocomposites. **PLAST MASTER Company** was established in 1995, and since that time, it is engaged in the processing of plastics. In 2003, due to the lack of manufacturers of foundation membranes in Poland, we decided to start production of these membranes in the country. In this way, we have become the first Polish manufacturer of dimpled membranes. On the basis of our products, following the needs of the market and our clients, we have launched the production of geocomposites.*

*Our experienced staff supervising the fully automated production process in conjunction with regular tests in specialized external notified laboratories and our own well-equipped research and development laboratory provide high quality of our products, giving buyers a guarantee of their durability.*

*We are a reliable company that cares about the needs of our customers by offering professional services and attractive prices.*

*Our all products are CE certified.*



**JEDNOSTKA NOTYFIKOWANA Nr 1488  
INSTYTUT TECHNIKI BUDOWLANEJ**

**ZAKŁAD CERTYFIKACJI**

ul. FILTROWA 1, 00-611 WARSZAWA  
tel.: (22) 57 96 167, (22) 57 96 168, fax: (22) 57 96 295  
e-mail: certyfikacja@itb.pl, www.itb.pl



AC 020

**CERTYFIKAT ZGODNOŚCI  
ZAKŁADOWEJ KONTROLI PRODUKCJI**

**1488-CPR-0338/Z**

Zgodnie z Rozporządzeniem Parlamentu Europejskiego i Rady (UE) Nr 305/2011 z dnia 9 marca 2011 r. (Rozporządzenie CPR), niniejszy certyfikat odnosi się do wyrobu budowlanego:

**VENTFOL (folia kubelkowa)**

odmian: **Eko, Standard, Super, Strong, Extra, Power**

FOLIA HDPE DO IZOLACJI PRZECIWWILGOCIOWEJ, TYPU V-VENTYLACYJNY LUB DRENAŻOWY  
do stosowania m.in. w systemach izolacji przeciwwilgociowej ścian, podłóg, lub pod podłogami, fundamentów, tarasów, stropów, stropodachów,  
oraz do izolacji przeciwwilgociowych w inżynierii lądowej z funkcją rozdzielania i drenażu.

**DRENFOL (geokompozyt)**

odmian: **Folia 500+ 850 g/m<sup>2</sup>, geowłóknina 90+ 150 g/m<sup>2</sup>**

FOLIA HDPE Z GEOWŁÓKNINĄ I FUNKCJĄ F-S-D (FILTRACJA, ROZDZIELANIE, DRENAŻ)  
do stosowania m.in. w systemach izolacji zewnętrznych, ścian, fundamentów, tarasów, stropów, stropodachów, „zielonych dachów”, oraz w  
inżynierii lądowej do odwadniania: dróg i powierzchni obciążonych ruchem, dróg kolejowych, zbiorników wodnych i zapor, kanałów, tuneli i  
konstrukcji podziemnych, robot ziemnych i konstrukcji oporowych.

**DRENTEXILE (geokompozyt)**

odmian: **Folia 500+ 850 g/m<sup>2</sup>, geotkanina 85+ 200 g/m<sup>2</sup>**

FOLIA HDPE Z GEOTKANINĄ I FUNKCJĄ F-S-D (FILTRACJA, ROZDZIELANIE, DRENAŻ)  
do stosowania m.in. w systemach izolacji zewnętrznych, ścian, fundamentów, tarasów, stropów, stropodachów, „zielonych dachów”, oraz w  
inżynierii lądowej do odwadniania: dróg i powierzchni obciążonych ruchem, dróg kolejowych, zbiorników wodnych i zapor, kanałów, tuneli i  
konstrukcji podziemnych, robot ziemnych i konstrukcji oporowych.

produkowanego przez:

**PLAST MASTER TERESA i RYSZARD SUDOŁ**

**ul. Polna 4B  
37-100 ŁAŃCUT**

w zakładzie produkcyjnym:

**PLAST MASTER TERESA i RYSZARD SUDOŁ**

**ul. Polna 4B  
37-100 ŁAŃCUT**

Niniejszy certyfikat potwierdza, że wszystkie postanowienia dotyczące oceny i weryfikacji stałości właściwości użytkowych, określone w załączniku ZA norm:

**EN 13252:2000, EN 13252:2002/A1:2005, EN 13967:2012,**

(odpowiedniki krajowe: PN-EN 13252:2002, PN-EN 13252:2002/A1:2006, PN-EN 13967:2012)

w systemie 2+ w odniesieniu do właściwości użytkowych określonych w niniejszym certyfikacie są stosowane oraz, że

**zakładowa kontrola produkcji spełnia wszystkie wymagania określone dla tych właściwości użytkowych.**

Niniejszy certyfikat, wydany po raz pierwszy 19.08.2013 (zaktualizowany 12.08.2014) pozostaje ważny, dopóki nie zmienią się metody badań i/lub wymagania dotyczące zakładowej kontroli produkcji, zawarte w zharmonizowanej normie, zastosowane do oceny właściwości użytkowych zadeklarowanych zasadniczych charakterystyk oraz sam wyrób budowlany i warunki jego wytwarzania nie ulegną istotnej zmianie oraz pod warunkiem, że nie zostanie zawieszony lub wycofany przez jednostkę certyfikującą zakładową kontrolę produkcji.

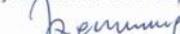
KIEROWNIK  
Zakładu Certyfikacji

  
Barbara Dobosz



Warszawa, 12.08.2014

ZASTĘPCA DYREKTORA  
Instytutu Techniki Budowlanej

  
Joanna Krzemińska



**NOTIFIED BODY No. 1488  
BUILDING RESEARCH INSTITUTE  
CERTIFICATION DEPARTMENT**

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**CERTIFICATE OF CONFORMITY  
OF THE FACTORY PRODUCTION CONTROL**

**1488-CPR-0338/Z**

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

**Dimpled membrane VENTFOL**

types: Eko, Standard, Super, Extra, Power  
**HDPE FOIL for DAMPPROOFING - VENTILATION or DRAINAGE (type V)**  
intended uses include external insulation systems for walls, floors, foundations, terraces, ceilings, and damp proofing systems in the civil engineering applications with drainage and separate function

**Geocomposite DRENFOL**

Surface density: 500-850 g/m<sup>2</sup> (foil), 90-150 g/m<sup>2</sup> (geotextile)  
**HDPE FOIL and GEOTEXTILE with F+S+D function (FILTRATION, SEPARATION, DRAINAGE)**  
intended uses include external insulation systems for walls, foundations, terraces, floors, roofs, "green roofs" and civil engineering drainage applications for roads, trafficked areas, railways, reservoirs and dams, tunnels, underground structures, excavation works and retaining structures

**Geocomposite DRENTEXTILE**

Surface density: 500-850 g/m<sup>2</sup> (foil), 35+200 g/m<sup>2</sup> (geophysical textile)  
**HDPE FOIL and GEOPHYSICAL TEXTILE with F+S+D function (FILTRATION, SEPARATION, DRAINAGE)**  
intended uses include external insulation systems for walls, foundations, terraces, floors, roofs, "green roofs" and civil engineering drainage applications for roads, trafficked areas, railways, reservoirs and dams, tunnels, underground structures, excavation works and retaining structures

produced by:

**PLAST MASTER TERESA I RYSZARD SUDOL**  
ul. Polna 4B  
37-100 LAŃCUT

in the manufacturing plant

**PLAST MASTER TERESA I RYSZARD SUDOL**  
ul. Polna 4B  
37-100 LAŃCUT

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standards:

**EN 13252:2000, EN 13252:2002/A1:2005, EN 13967:2012**

under system 2+ for the performances set out in this certificate are applied and that

the factory production control fulfils all the prescribed requirements for these performances.

This certificate was first issued on 19.06.2013 (updated on 12.08.2014) and will remain valid as long as the test methods and/or factory production control requirements included in the harmonised standard used to assess the performances of the declared essential characteristics do not change, and the construction product and the manufacturing conditions in the plant are not modified significantly, unless suspended or withdrawn by the factory production control certification body.

HEAD  
of the Certification Department

Barbara Dobosz



Warsaw, 12.08.2014

DEPUTY DIRECTOR  
of the Building Research Institute

Joanna Krzemińska



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**ZNAK CERTYFIKACJI**

Upoważnia się firmę:

**PLAST MASTER TERESA I RYSZARD SUDOŁ  
UL. POLNA 4B  
37-100 ŁAŃCUT**

producenta wyrobu:

**VENTFOL (folia kubełkowa)  
DRENFOL (geokompozyt)  
DRENTXILE (geokompozyt)**

do stosowania znaku certyfikacji ITB „ZAKŁADOWA KONTROLA PRODUKCJI”  
w okresie ważności certyfikatu nr 1488-CPR-0338/Z



**CERTYFIKAT  
ZAKŁADOWEJ KONTROLI PRODUKCJI  
1488-CPR-0338/Z**

KIEROWNIK  
Zakładu Certyfikacji

Barbara Dobcz



Warszawa, 12.08.2014

ZASTĘPCA DYREKTORA  
Instytutu Techniki Budowlanej

Joanna Kizemńska



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**CERTIFICATION MARK**

The company

**PLAST MASTER TERESA I RYSZARD SUDOŁ  
UL. POLNA 4B  
37-100 ŁAŃCUT**

being the manufacturer of the product

**Dimpled membrane VENTFOL**

**Geocomposites DRENFOL and DRENTXTILE**

is authorized to use  
the ITB certification mark „ZAKŁADOWA KONTROLA PRODUKCJI”  
during the period of validity of the certificate no. 1488-CPR-0338/Z



**FACTORY PRODUCTION CONTROL CERTIFICATE  
1488-CPR-0338/Z**

HEAD  
of the Certification Department

Barbara Dobosz



Warsaw, 12.08.2014

DEPUTY DIRECTOR  
of the Building Research Institute

Joanna Krzemińska

▶ GEOMEMBRANES

Ventfol

Hydrofol

▶ GEOKOMPOSITES

Drenfol

Drentextile

▶ ACCESSORIES

Finishing profile  
Butyl tape  
Nails with washers

▶ STANDARD DIMENSIONS OF ROLLS AND THEIR PALLETISING

# ▶ GEOMEMBRANES

**Ventfol**

**VENTFOL STANDARD**

**VENTFOL SUPER**

**VENTFOL STRONG**

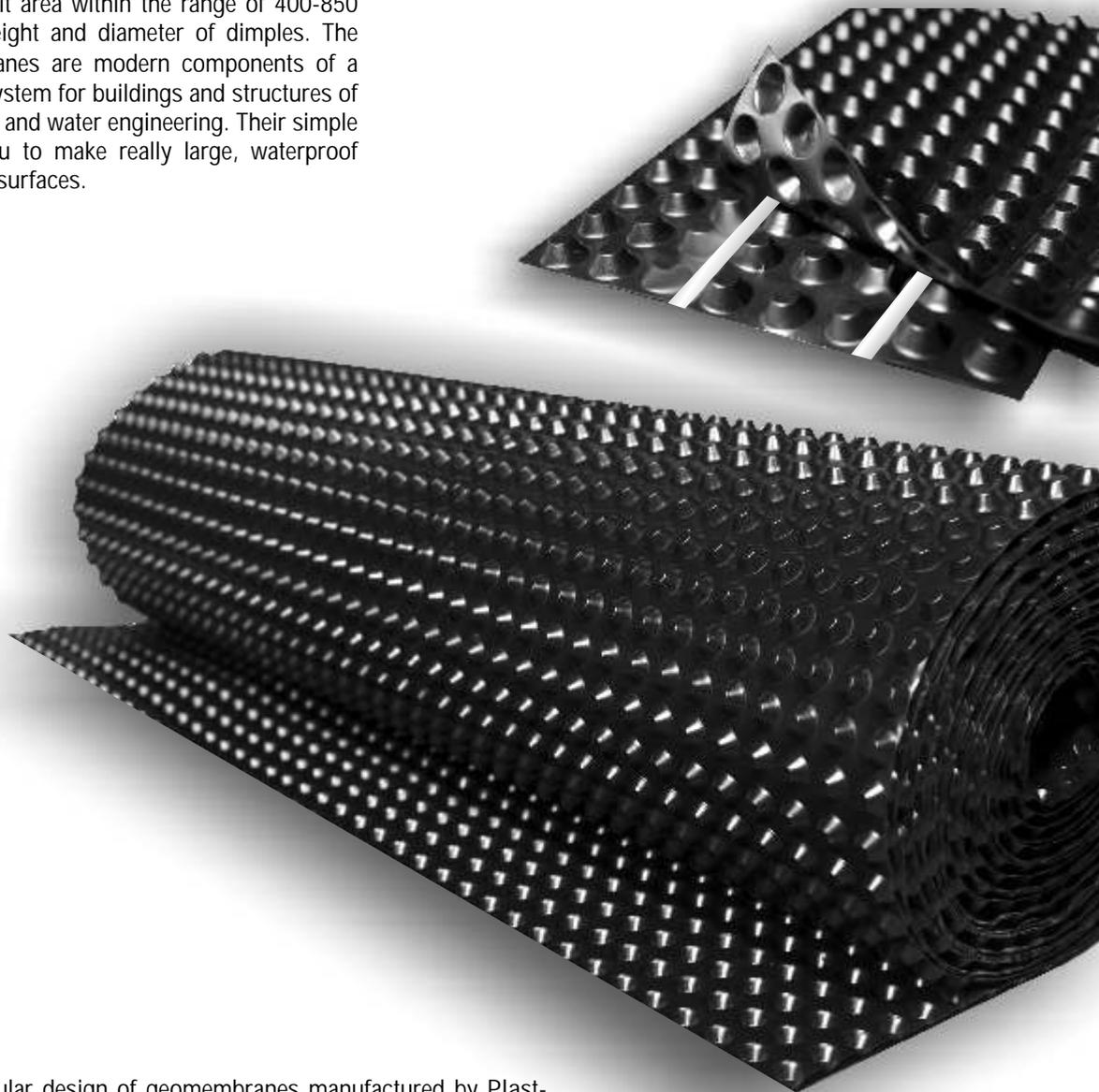
**VENTFOL EXTRA**

**VENTFOL POWER**



# VENTFOL GEOMEMBRANES

VENTFOL geomembranes are extruded from high density polyethylene (HDPE) of a predetermined and specially selected mass per unit area within the range of 400-850 g/m<sup>2</sup>, and optimal height and diameter of dimples. The VENTFOL geomembranes are modern components of a moisture protection system for buildings and structures of civil engineering, road and water engineering. Their simple installation allows you to make really large, waterproof vertical and horizontal surfaces.



The particular design of geomembranes manufactured by Plast-Master consists in a mutually perpendicular arrangement of dimples, called an orthogonal system. It provides maximizing the water flow in the plane of the product, facilitates installation within the area of plane bends, increases the tensile strength, especially within the fabrication direction, compared to the diagonal system. It gives the opportunity to make a so-called, modular seam.

# TYPES OF VENTFOL GEOMEMBRANES

A wide range of VENTFOL products was developed specifically to meet the specific and diverse requirements of our customers and comprises the following types:

**VENTFOL STANDARD** - this geomembrane traditionally proved its worth for a moisture barrier systems both in residential as well as industrial buildings, adapted to moderate soil conditions, and moderate loads, appreciated for its ease of installation.

**VENTFOL SUPER** - a membrane with increased weight per square meter and optimally selected mechanical strength, tested under conditions of elevated risk of mechanical damages and challenging ground conditions.

**VENTFOL STRONG** - a geomembrane designed to withstand high mechanical loads. Designed for building insulation especially in civil engineering, for example watertight road drainage ditches.

**VENTFOL EXTRA** - a geomembrane designed for high mechanical loads (pressure, tearing, stretching), soils containing sharp edge rock material, especially suited for deep underground garages, loaded bridge abutments and all kinds of civil engineering, for example tunnels, bridges, culverts.

**VENTFOL POWER** - a geomembrane included in the group with the highest weight per square meter, adapted to extremely difficult conditions both in terms of loads as well as soil conditions, especially popular for individual projects, for example road and tunnel construction, railway applications.



**VENTFOL SUPER - STRONG - EXTRA - POWER** - geomembranes with improved mechanical properties, compressive strength, tear resistance and tensile strength, give the opportunity to create your own watertight barriers after using a butyl tape for sealing membrane sheet joints and places of membrane punctures.

# SPECIFICATIONS OF VENFTOL GEOMEMBRANES

Property	Test Method	Units	Standard	Super	Strong	Extra	Power
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h	6kPa/24	6kPa/24h	6kPa/24	6kPa/24
Resistance to static load	PN EN 12730	kg/24h	≥30kg/24h	≥30kg/24h	≥35kg/24	≥35kg/24h	≥40kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥290	MD ≥320	MD ≥410	MD ≥450	MD ≥630
			CMD ≥220	CMD ≥260	CMD ≥370	CMD ≥380	CMD ≥500
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥40	MD ≥40	MD ≥40	MD ≥45	MD ≥48
			CMD ≥30	CMD ≥30	CMD ≥32	CMD ≥30	CMD ≥32
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met				
Durability of water tightness against chemicals	PN EN 1928 after testing PN EN 1847	2kPa/24h	Test requirements are met				
Resistance to impact	PN EN 12691	mm	≥350	≥400	≥400	≥500	≥500
Resistance to tearing (nail shank); products without reinforcement	PN EN 12310-1	N	MD ≥260	MD ≥350	MD ≥420	MD ≥450	MD ≥550
			CMD ≥330	CMD ≥400	CMD ≥430	CMD ≥450	CMD ≥650
Reaction to fire	PN EN 13501-1	—	F	F	F	F	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	30kPa/24h deformation below 5%	30kPa/24h deformation below 5%	30kPa/24h deformation below 5%	40kPa/24h deformation below 5%	40kPa/24h deformation below 5%
Compressive strength	PMS 96752:2013	kN/m <sup>2</sup>	≥150	≥220	≥310	≥320	≥610
Length	PN EN 1848-2	m	According to Customer's order ±0,2				
Width	PN EN 1848-2	m	According to Customer's order ±0,005				
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	400±10%	500±10%	600±10%	650±10%	850±10%
Straightness	PN EN 1848-2	max 75 mm	max 50				

Legend:

**MD** – properties in the machine direction

**CMD** – properties in the cross machine direction

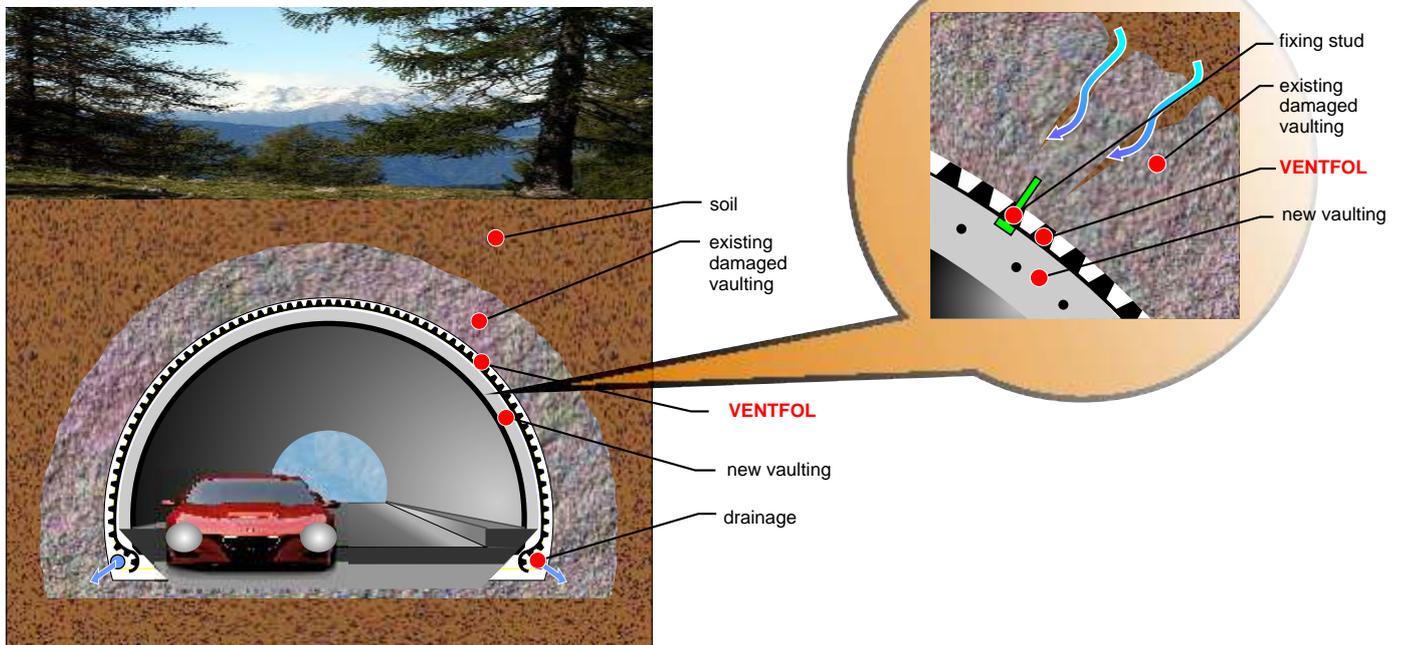
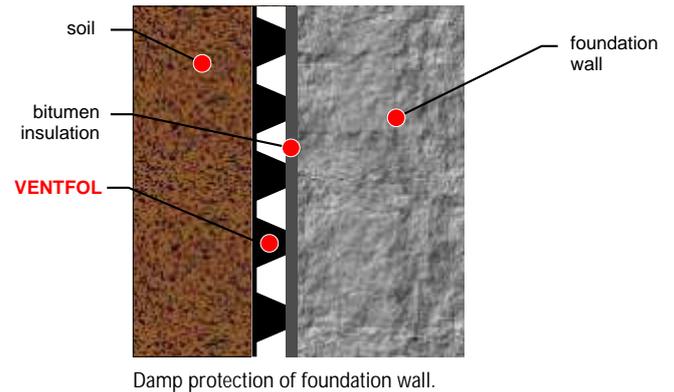
The table contains average values of each property from tests made in our company during the period from September 2013 until March 2014. Declared values are included in the Declarations of Performance available in the "Downloads" tab.

The above data is given with the best of our knowledge, test results, experience and in good faith, but in practice, the differences in materials, methods of product usage, and site conditions, which are beyond our control, may affect the need for verification. Characteristics of a product specified in the data, written recommendations, and other guidelines provided cannot be grounds to assume PLAST MASTER's responsibility. It is not our intention to violate any patents or licenses. The current declarations of performance are available on our website.

# APPLICATIONS OF VENFTOL GEOMEMBRANES

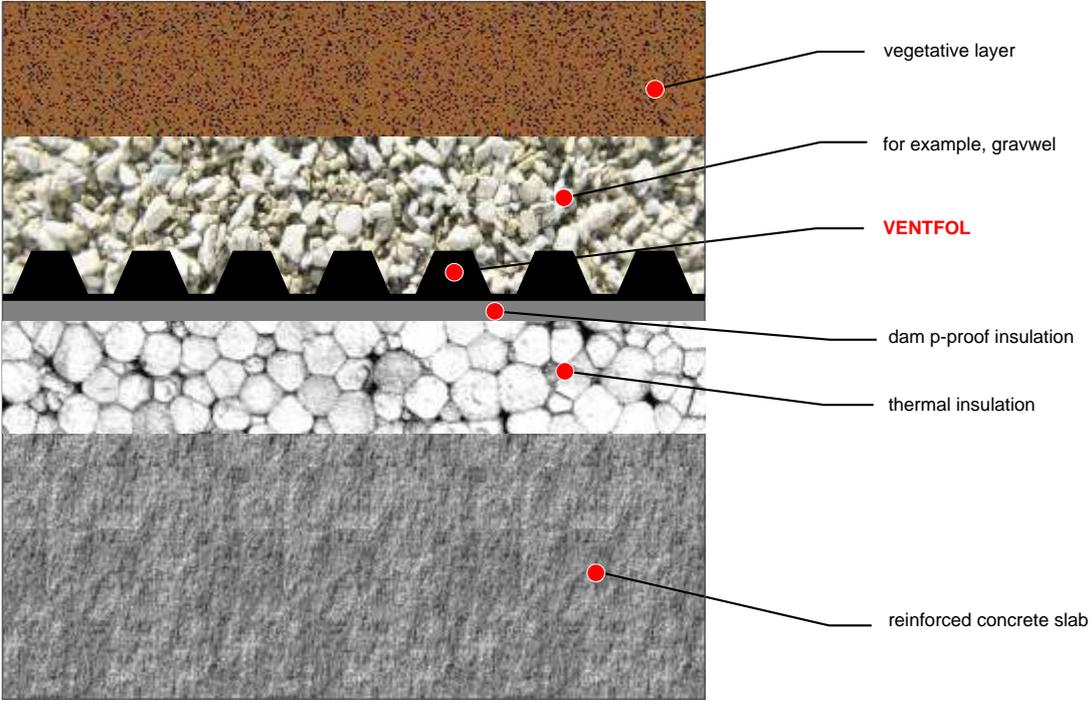
A wide range of masses per unit area and carefully selected raw materials make that our VENTFOL geomembranes are widely used in construction. Starting from single-family dwellings and outbuildings, located on light, permeable soils and ending with multi-family buildings, industrial and civil engineering buildings, situated in difficult ground conditions. For applications in residential construction we suggest, lightweight and durable VENTFOL STANDARD geomembrane. It is an attractive value for money product.

VENTFOL Geomembranes with a weight of 500 g/m<sup>2</sup> and higher (Super, Strong, Extra, Power) are perfectly suited for areas requiring high compressive strength, impact resistance and surface pressures, for example, deep multi-storey basements, garages, abutments of bridges, tunnel linings, for individual projects of dewatering and drainage systems, roads, bridges, railway embankments. Geomembranes eliminate the possibility of mechanical damages of the outer insulating bitumen layer of foundations and engineering structures during backfilling and protects the insulation during subsidence.

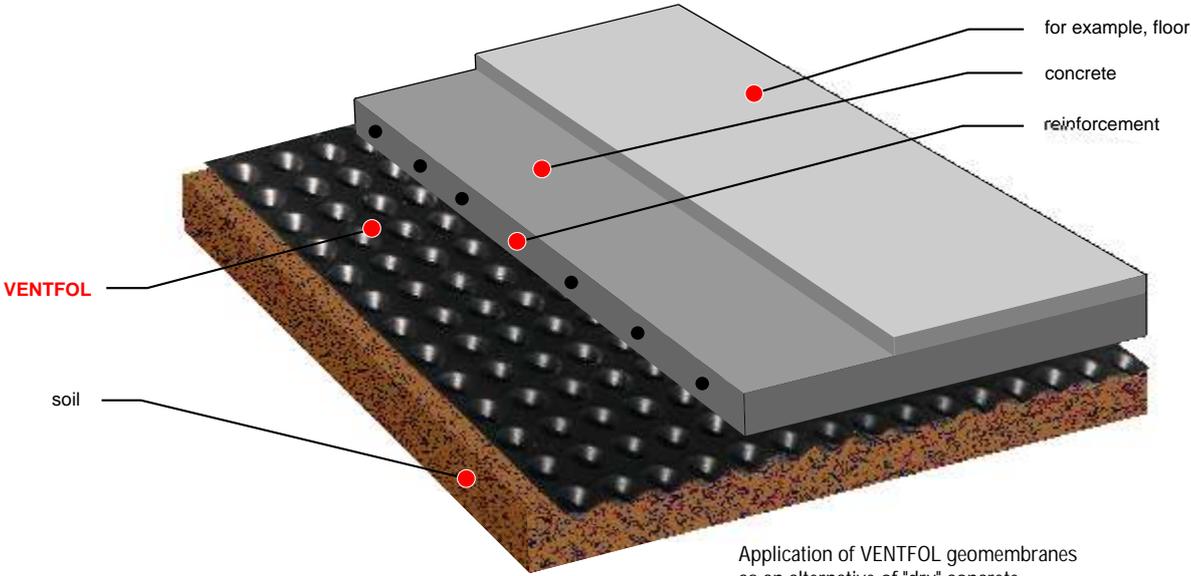


# APPLICATIONS OF VENFTOL GEOMEMBRANES

VENTFOL geomembranes, in addition to the conventional usage for protecting foundations, have a wide application for structural elements of the so-called inverted roofs, "Green roofs", ceilings, terraces, flat roofs and floors.



Application of VENTFOL geomembranes for the construction of so-called inverted roofs.



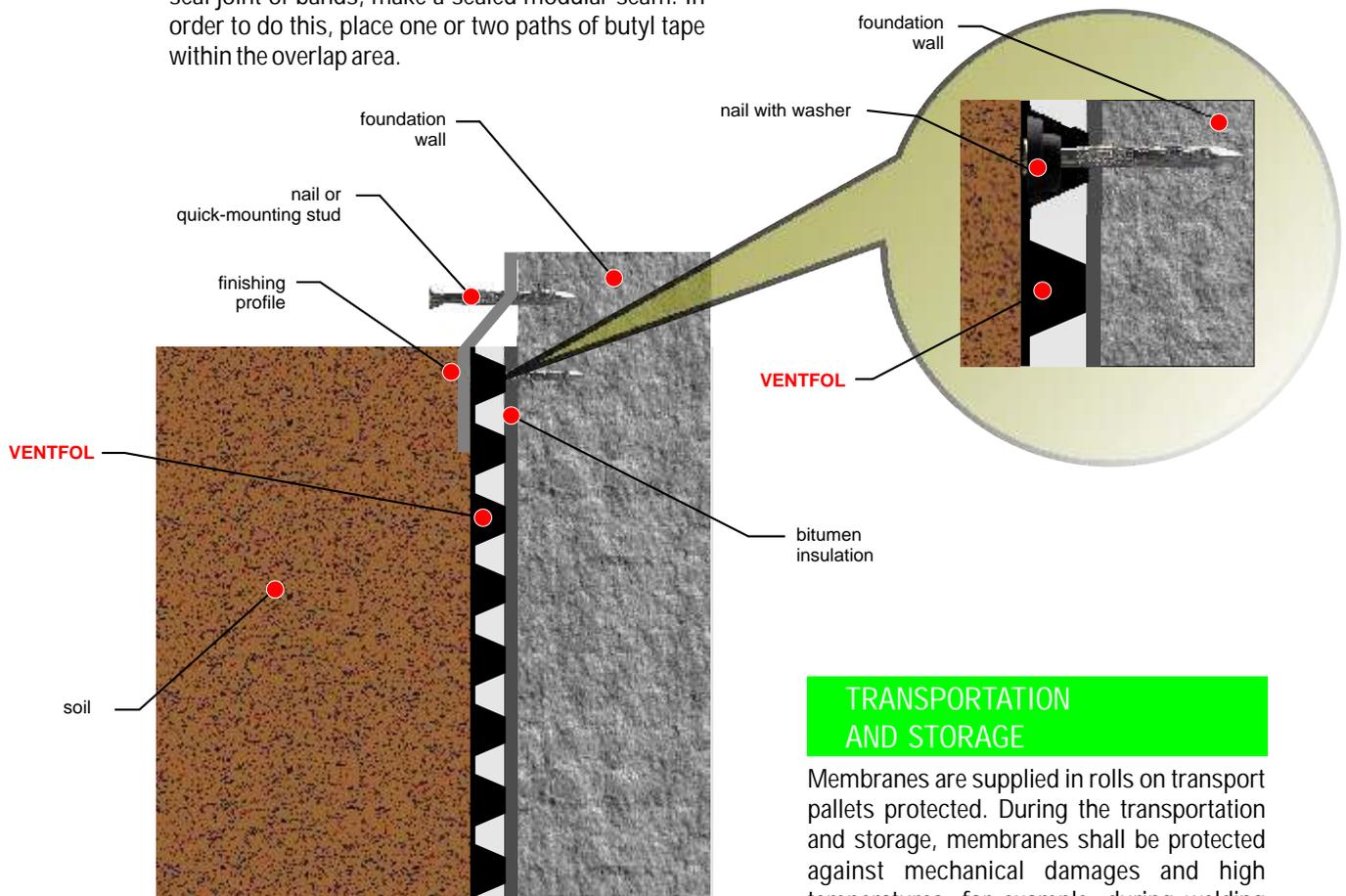
Application of VENTFOL geomembranes as an alternative of "dry" concrete.

# INSTALLATION METHOD, TRANSPORTATION AND STORAGE OF VENTFOL GEOMEMBRANES

## INSTALLATION METHOD

Membrane sheets shall be fixed with steel nails or studs at the spacing of approx. 60 cm. When fastening to polystyrene foam, you can use quick mounting studs. While joining membrane sheets, you shall make a so-called seam - an overlap of approx. 30 cm width. With horizontal installation of membranes, when overlapping large areas, it is good to use double-sided adhesive tape. To obtain a tight seal joint of bands, make a sealed modular seam. In order to do this, place one or two paths of butyl tape within the overlap area.

When using our membranes, you shall always follow the detailed recommendations set out in the technical design of an object. Membranes may be installed in any weather conditions.



An example of installation of VENTFOL geomembranes to a foundation wall.

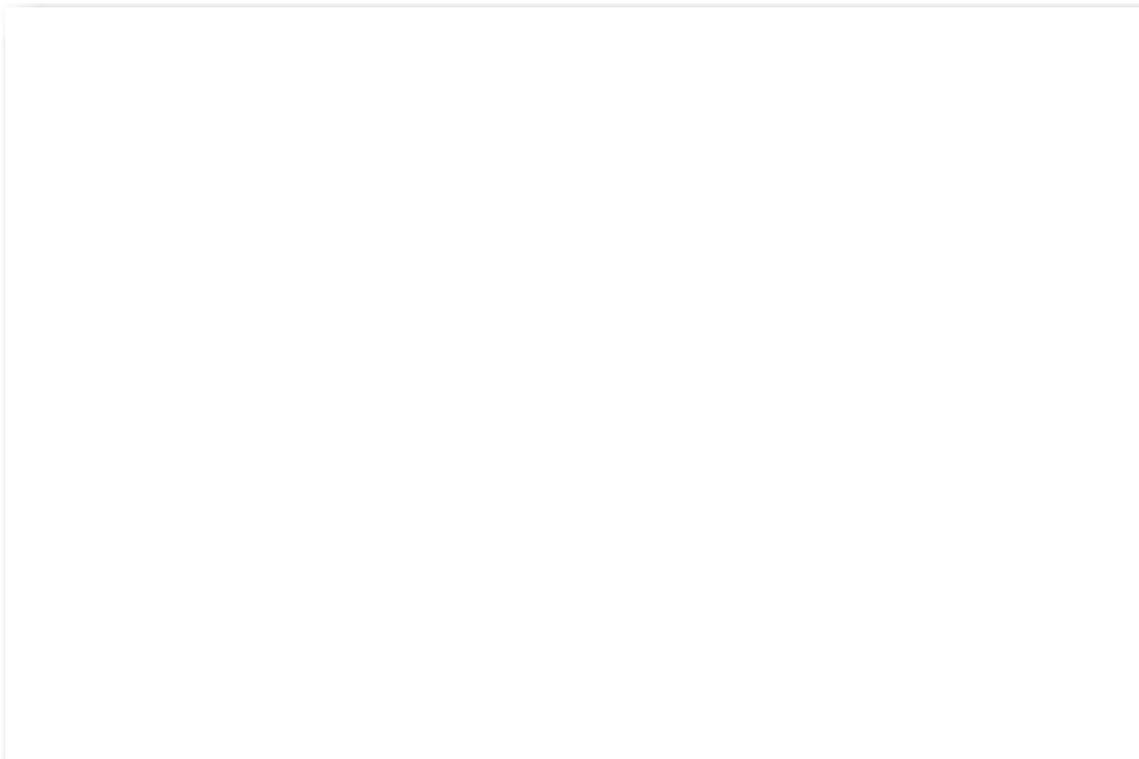
## TRANSPORTATION AND STORAGE

Membranes are supplied in rolls on transport pallets protected. During the transportation and storage, membranes shall be protected against mechanical damages and high temperatures, for example, during welding works.

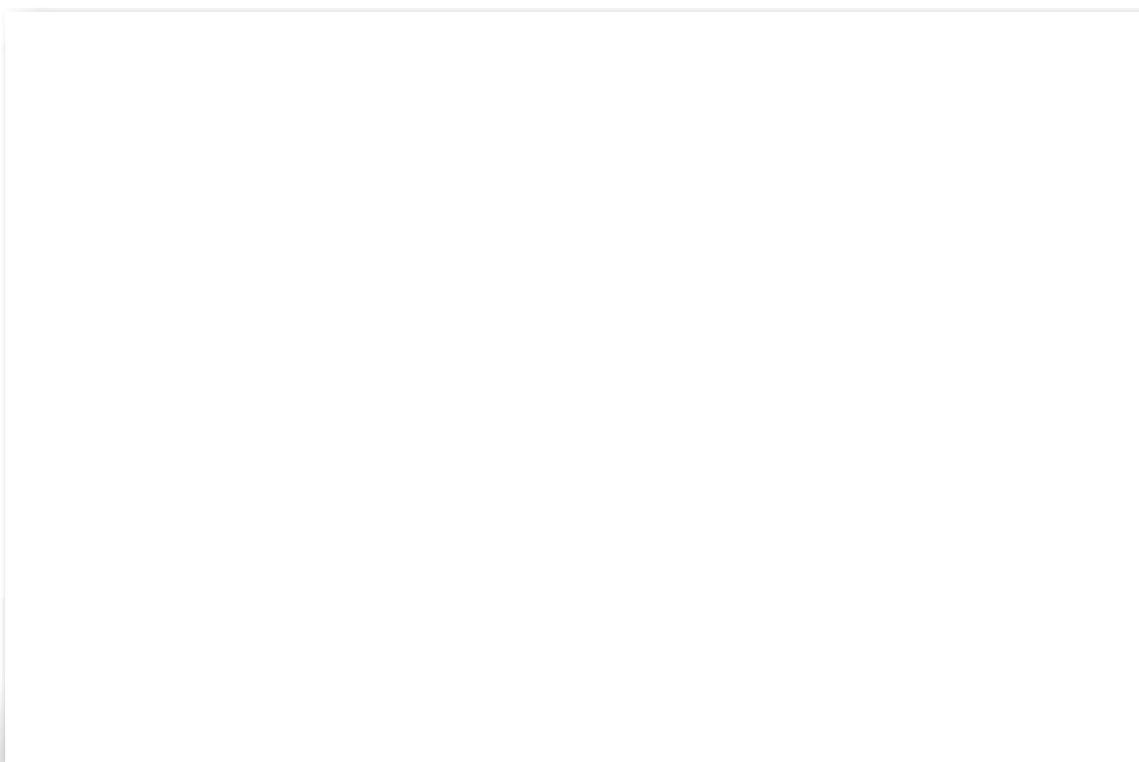
## GEOMEMBRANE ACCESSORIES



## VENTFOL STANDARD



## VENTFOL SUPER



## DATA SHEET

# VENTFOL STANDARD

## Specifications of VENTFOL geomembranes

VENTFOL STANDARD geomembrane, the height of dimples is about 8 mm, Type V according to the harmonized standard EN 13967

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥30 kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥290
			CMD ≥220
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥40 CMD ≥30
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥350
Resistance to tearing (nail shank): products without reinforcement	PN EN 12310-1	N	MD ≥260
			CMD ≥330
Reaction to fire	PN EN 13501-01	—	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	30kPa/24h deformation below 5%
Compressive strength	PMS 967252:2013	kN/m <sup>2</sup>	≥150
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	400±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Joint – seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## DATA SHEET

# VENTFOL SUPER

## Specifications of VENTFOL geomembranes

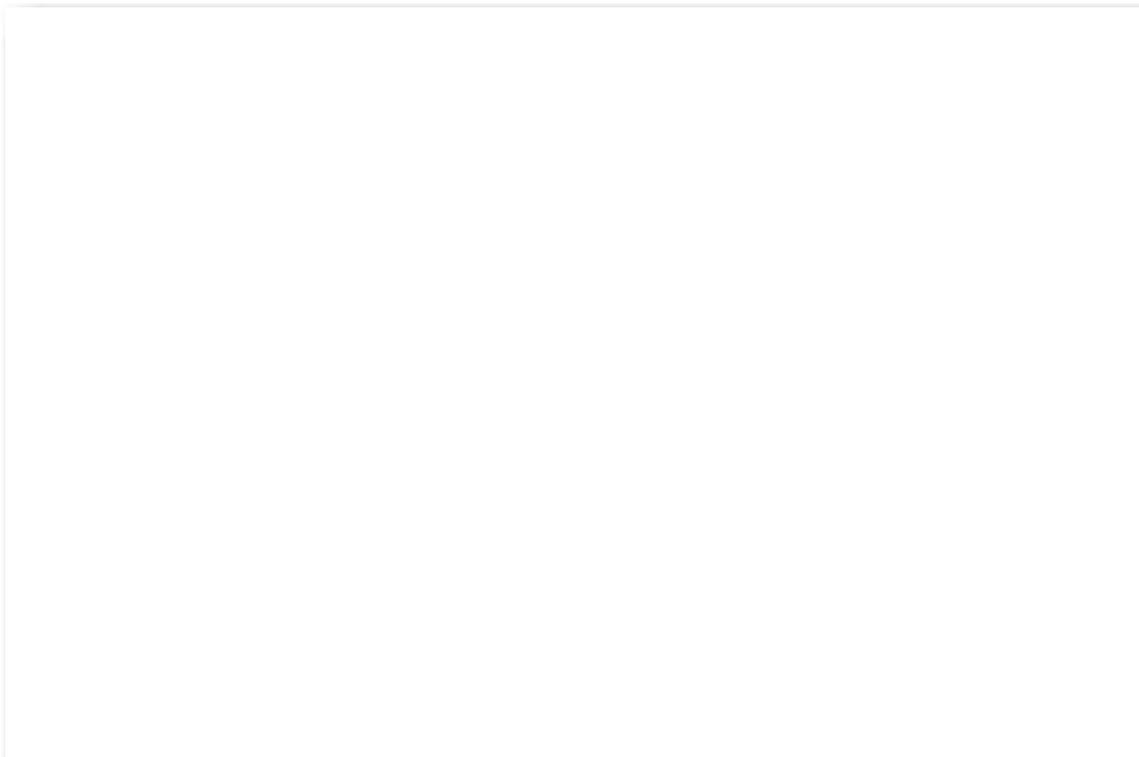
VENTFOL SUPER geomembrane, the height of dimples is about 8 mm, Type V according to the harmonized standard EN 13967

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥30 kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥320
			CMD ≥260
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥40
			CMD ≥30
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥400
Resistance to tearing (nail shank): products without reinforcement	PN EN 12310-1	N	MD ≥350
			CMD ≥400
Reaction to fire	PN EN 13501-01	—	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	30kPa/24h deformation below 5%
Compressive strength	PMS 967252:2013	kN/m <sup>2</sup>	≥220
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	500±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Joint – seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

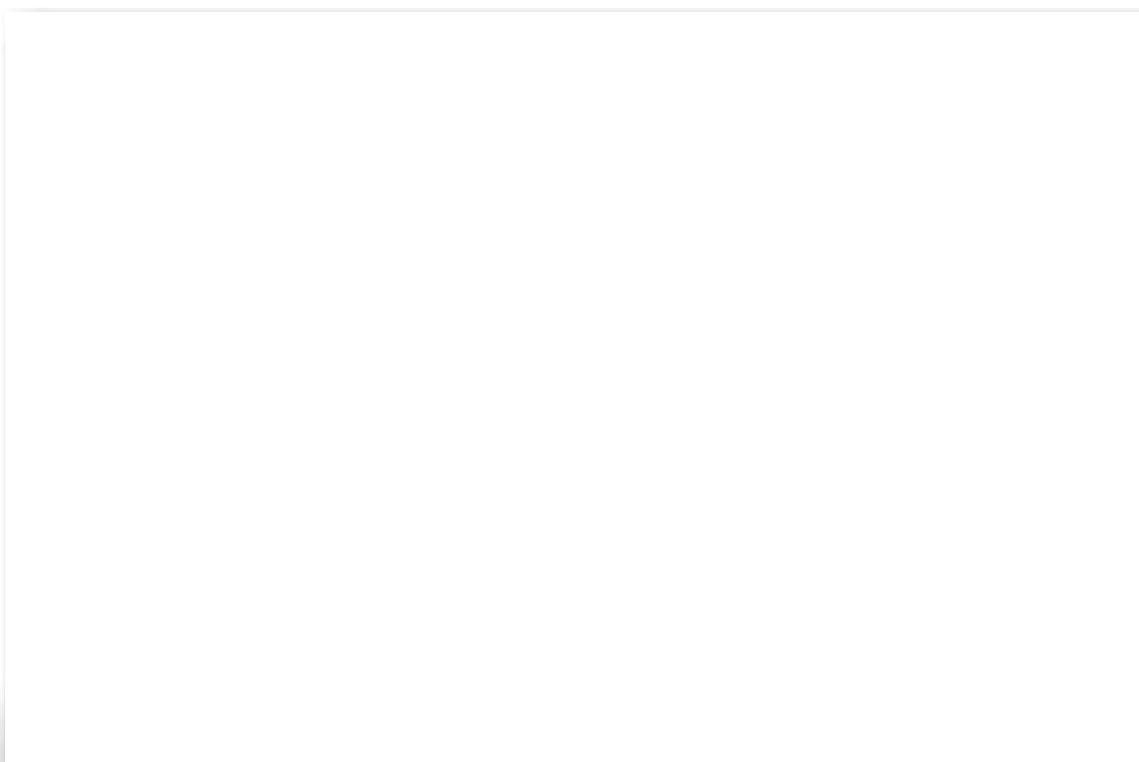
The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## **VENTFOL STRONG**



## **VENTFOL EXTRA**



## DATA SHEET

# VENTFOL STRONG

## Specifications of VENTFOL geomembranes

VENTFOL STRONG geomembrane, the height of dimples is about 8 mm, Type V according to the harmonized standard EN 13967

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥35kg/24h
Maximum tensile force	PN EN 12311-2	N/50mm	MD ≥410
			CMD ≥370
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥40
			CMD ≥32
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥400
Resistance to tearing (nail shank): products without reinforcement	PN EN 12310-1	N	MD ≥420
			CMD ≥430
Reaction to fire	PN EN 13501-01	—	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	30kPa/24h deformation below 5%
Compressive strength	PMS 967252:2013	kN/m <sup>2</sup>	≥310
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	600 ±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Joint – seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## DATA SHEET

# VENTFOL EXTRA

## Specifications of VENTFOL geomembranes

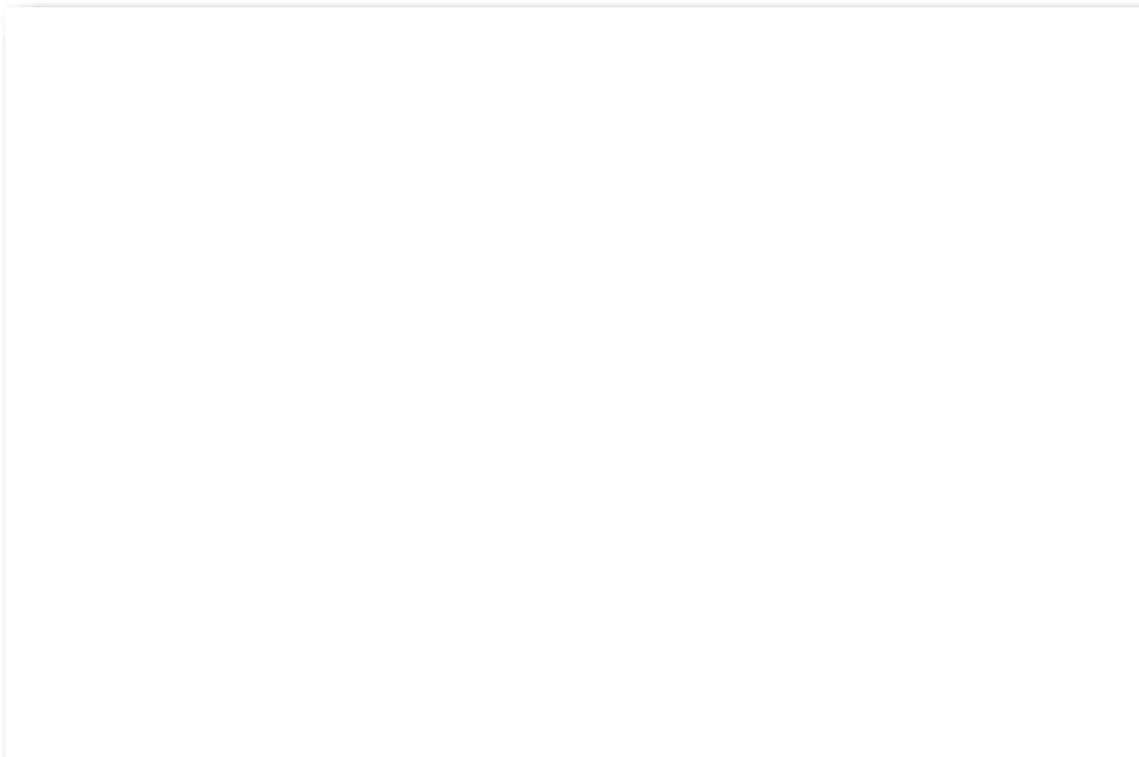
VENTFOL EXTRA geomembrane, the height of dimples is about 8 mm, Type V according to the harmonized standard EN 13967

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥35kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥450
			CMD ≥380
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥45
			CMD ≥30
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥500
Resistance to tearing (nail shank): products without reinforcement	PN EN 12310-1	N	MD ≥450
			CMD ≥450
Reaction to fire	PN EN 13501-01	—	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	40kPa/24h deformation below 5%
Compressive strength	PMS 967252:2013	kN/m <sup>2</sup>	≥320
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	650 ±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Joint – seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

# VENTFOL POWER



## DATA SHEET

# VENTFOL POWER

## Specifications of VENTFOL geomembranes

VENTFOL POWER geomembrane, the height of dimples is about 8 mm, Type V according to the harmonized standard EN 13967

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥40kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥630
			CMD ≥500
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥48
			CMD ≥32
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥500
Resistance to tearing (nail shank): products without reinforcement	PN EN 12310-1	N	MD ≥550
			CMD ≥650
Reaction to fire	PN EN 13501-01	—	F
Resistance to deformation under a load	Annex B to standard PN EN 13967/2012, to standard 14909	—	40kPa/24h deformation below 5%
Compressive strength	PMS 967252:2013	kN/m <sup>2</sup>	≥610
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	850±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Joint – seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

# ▶ GEOMEMBRANES

Hydrofol



## HORIZONTAL INSULATION OF FOUNDATIONS

Our **HYDROFOL** geomembrane is a horizontal geomembrane, manufactured from high density polyethylene, HDPE of optimally selected physical properties. It protects structural elements of walls against capillary moisture penetration and against damp rising up the structure. Our membrane remains flexible even at a temperature of  $-30^{\circ}\text{C}$  in contrast to membranes made from PVC. It replaces also bituminous materials cumbersome to use like tar paper, pitches. The membrane has double ribbing that prevent its movement in the mortar.



### PURPOSE

**HYDROFOL** geomembrane is used for residential, industrial buildings and wherever it is necessary to break the rise of damp through capillary action phenomenon.

# INSTALLATION METHOD, TRANSPORTATION AND STORAGE OF HYDROFOL GEOMEMBRANE

## INSTALLATION METHOD

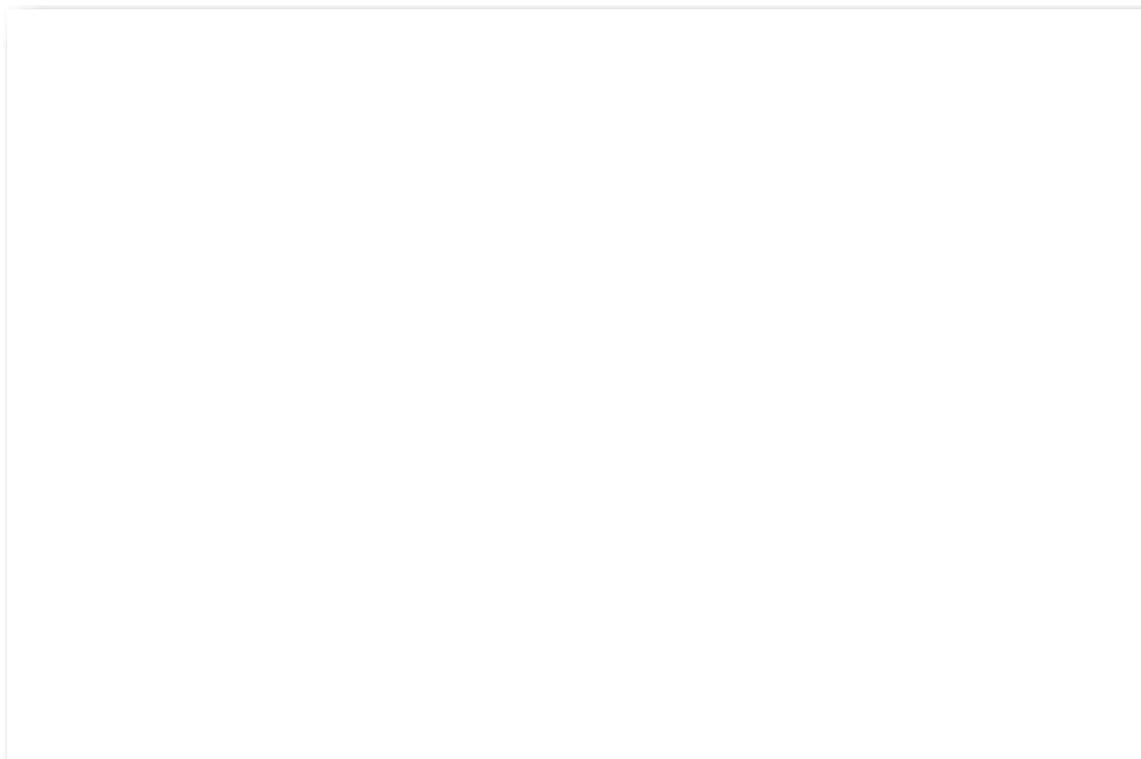
The surface area, on which the membrane will be laid, shall be leveled with mortar. Unroll the membrane on thus prepared substrate. The membrane width shall be not lower than the width of wall. Then, put a layer of mortar and continue the process of construction of the wall. When building a wall of high moisture absorption, the insulation shall be repeated after laying one or two layers of blocks. In the case of joining membrane strips, overlap them by approx. 30 cm.



## TRANSPORTATION AND STORAGE

During the transportation and storage, membranes shall be protected against mechanical damages and high temperatures, for example, during welding works.

# HYDROFOL



## DATA SHEET

# HYDROFOL

## Specifications of HTDROFOL geomembranes

HYDROFOL geomembrane for horizontal insulation according to the harmonized standard EN 14909

Property	Test Method	Units	Value
Water tightness	PN EN 1928 Test A	2kPa/24h	6kPa/24h
Resistance to static load	PN EN 12730	kg/24h	≥20kg/24h
Maximum tensile force	PN EN 12311-2	N/50 mm	MD ≥230
			CMD ≥180
Elongation at maximum tensile force	PN EN 12311-2	%	MD ≥25
			CMD ≥15
Durability of water tightness against ageing	PN EN 1928 after testing per PN EN 1296	2kPa/24h	Test requirements are met
Durability of water tightness against chemicals	PN EN 1928 after testing per PN EN 1847	2kPa/24h	Test requirements are met
Resistance to impact	PN EN 12691	mm	≥250
Resistance to tearing (nail shank)	PN EN 12310-1	N	MD ≥200
			CMD ≥170
Reaction to fire	PN EN 13501-01	—	F
Length	PN EN 1848-2	m	According to Customer's order ±0,2
Width	PN EN 1848-2	m	According to Customer's order ±0,005
Mass per unit area	PN EN 1849-2	g/m <sup>2</sup>	280 ±10%
Straightness	PN EN 1848-2	max 75 mm	max 50
Resistance to low temperatures	EN 495-5	°C	≥-30

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

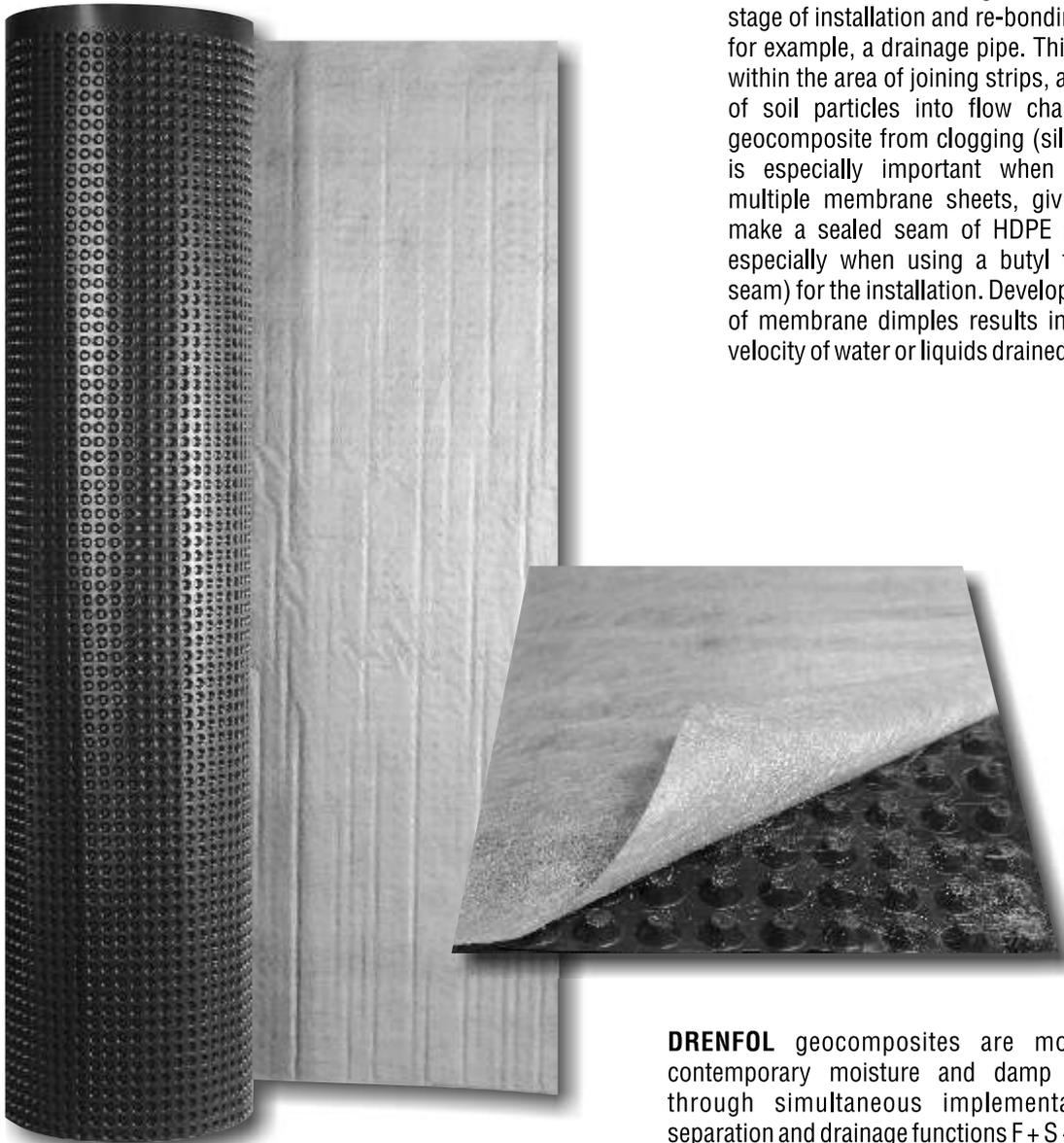
# ▶ GEOCOMPOSITES

DRENFOL



## DRENFOL GEOCOMPOSITES

Our **DRENFOL** geocomposites were developed by a combination of dimpled HDPE geomembrane of a mass per unit area within the range of 500 to 850 g/m<sup>2</sup> with a special geotextile made of PP fibers of a mass per unit area within the range of 90 to 150 g/m<sup>2</sup>. Geocomposites are characterized by a very high tensile strength and compressive strength.



Combination of geocomposite components is carried out by means of hot-melt (non-drying) adhesive, which provides durability of connection at operating conditions, while ensuring disconnection of layers at the stage of installation and re-bonding after installation of, for example, a drainage pipe. This provides protection, within the area of joining strips, against the penetration of soil particles into flow channels, protecting the geocomposite from clogging (silting). This technology is especially important when connecting together multiple membrane sheets, giving the possibility to make a sealed seam of HDPE geomembrane sheets especially when using a butyl tape (modular sealed seam) for the installation. Developed orthogonal system of membrane dimples results in maximizing the flow velocity of water or liquids drained.

**DRENFOL** geocomposites are modern elements of contemporary moisture and damp protection systems through simultaneous implementation of filtration, separation and drainage functions F + S + D.

## EXAMPLES OF THE VERSIONS MATERIALS CONSTITUTING A GEOCOMPOSITES DRENFOL

Property	Test Method	Unit	500+110	650+110	850+110	500+150	650+150	850+150
Tensile strength	PN EN ISO 10319	kN/m	MD 15 (-1,5) CMD 15 (-1,5)	MD 18 (-2,5) CMD 17 (-3,0)	MD 22 (-2,0) CMD 21 (-1,9)	MD 19,4 (-1,5) CMD 17,9 (-2,0)	MD 21 (-1,5) CMD 19,4 (-1,6)	MD 25 (-2,8) CMD 22,3 (-1,8)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 45 (±5,6) CMD 38 (±2,6)	MD 45 (±9,0) CMD 33 (±5,0)	MD 35 (±8,2) CMD 33 (±5,1)	MD 47 (±2,6) CMD 43 (±4,7)	MD 44 (±5,5) CMD 38 (±5,0)	MD 37 (±6,7) CMD 33 (±4,0)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)	3,2 (-0,24)	3,2 (-0,24)	3,2 (-0,24)	3,2 (-0,24)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	1,00 (-0,10)	1,00 (-0,10)	1,00 (-0,10)	1,575 (-0,21)	1,575 (-0,21)	1,575 (-0,21)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	35 (+7)	35 (+7)	35 (+7)	27 (+7)	27 (+7)	27 (+7)
Characteristic opening size	PN EN ISO 12956	µm	140 (± 42)	140 (±42)	140 (±42)	100 (±20)	100 (±20)	100 (±20)
Water permeability normal to the plane of a product $V_{H2O}$	EN ISO 11058	m/s	$70 \times 10^{-3}$ (- $21 \times 10^{-3}$ )	$70 \times 10^{-3}$ (- $21 \times 10^{-3}$ )	$70 \times 10^{-3}$ (- $21 \times 10^{-3}$ )	$40 \times 10^{-3}$ (- $8 \times 10^{-3}$ )	$40 \times 10^{-3}$ (- $8 \times 10^{-3}$ )	$40 \times 10^{-3}$ (- $8 \times 10^{-3}$ )
Durability	According to Annex B							
Resistance to weathering against aging	PN EN 12224	%	Cover within 2 weeks after application					
Resistance to chemical degradation	PN EN ISO 13438	%	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C
Dangerous substances	—	—	NPD	NPD	NPD	NPD	NPD	NPD
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	640 (±65)	790 (±80)	990 (±100)	680 (±70)	830 (±85)	1030 (±105)
Compressive strength	PMS 967/252: 2013	kN/m <sup>2</sup>	225 (-21)	330 (-25)	630 (-45)	260 (-45)	380 (-45)	650 (-55)

### Legend:

**MD - properties in the machine direction**

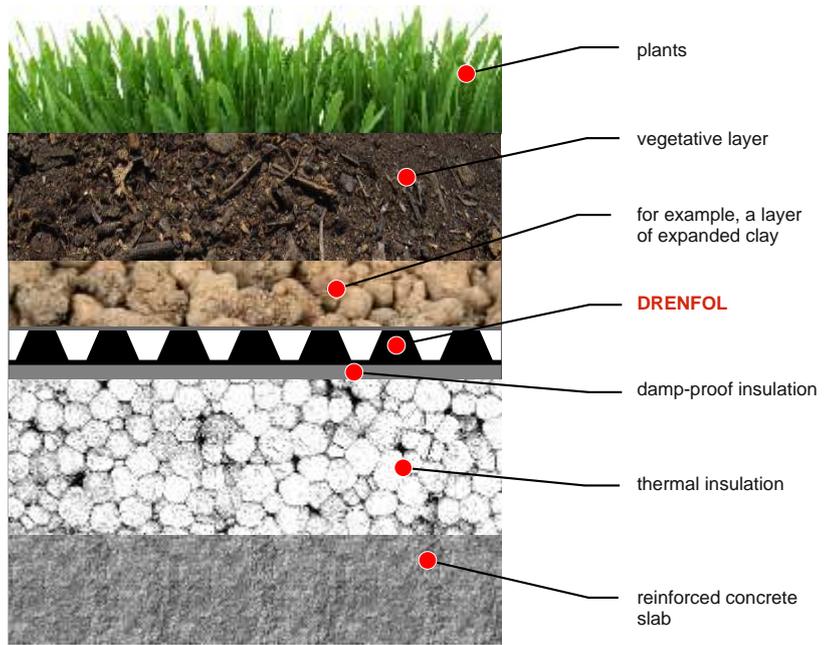
**CMD - properties in the cross machine direction**

The table contains average values of each property from tests made in our company during the period from September 2013 until March 2014. Declared values are included in the Declarations of Performance available in the "Downloads" tab.

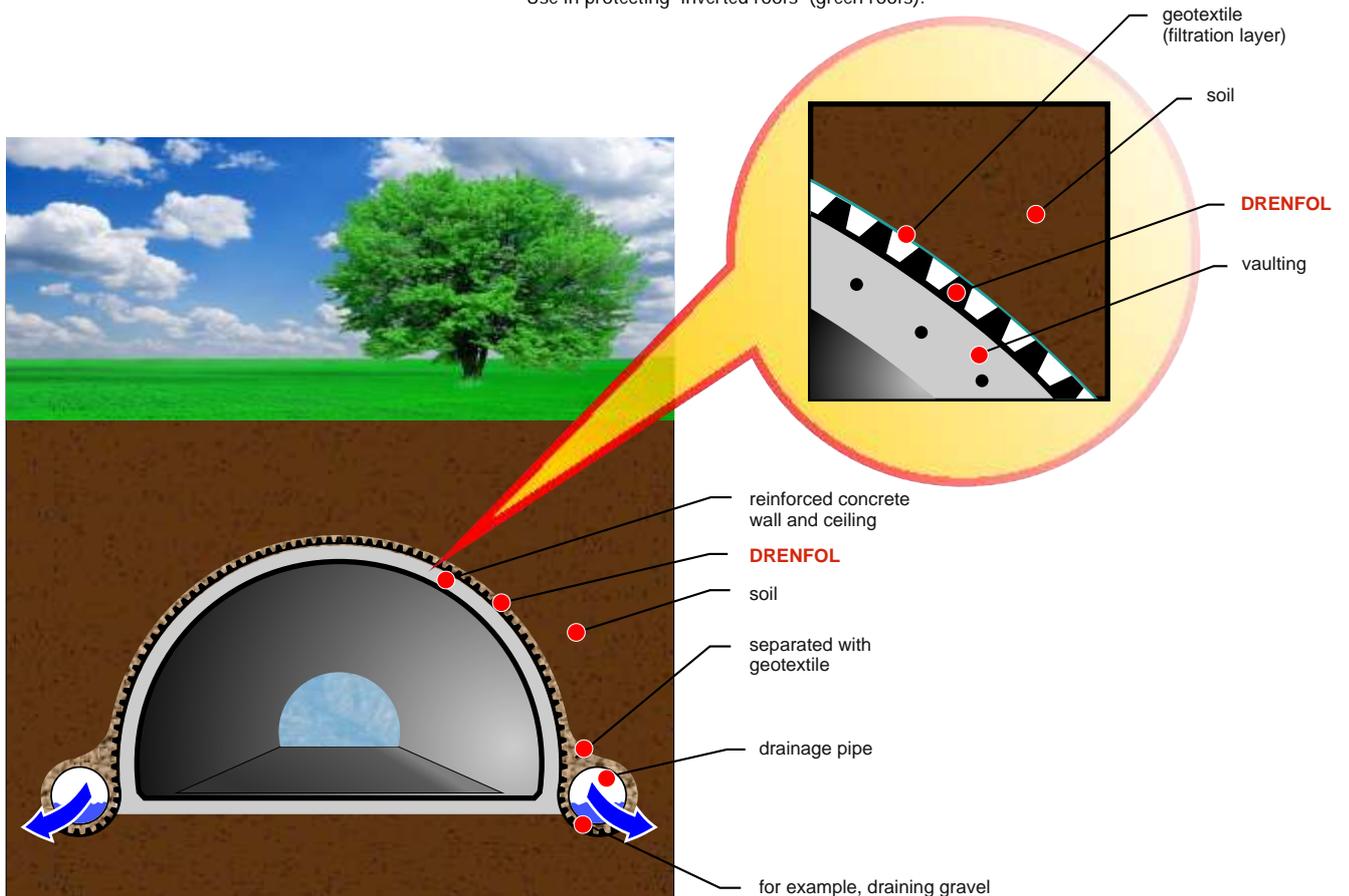
The above data is given with the best of our knowledge, test results, experience and in good faith, but in practice, the differences in materials, methods of product usage, and site conditions, which are beyond our control, may affect the need for verification. Characteristics of a product specified in the data, written recommendations, and other guidelines provided cannot be grounds to assume PLAST MASTER's responsibility. It is not our intention to violate any patents or licenses. The current declarations of performance are available on our website. **It is possible to make other composition of geocomposites.**

# APPLICATION OF DRENFOL GEOCOMPOSITES

Due to their mechanical properties, separation, drainage and a wide range of filtration capabilities, DRENFOL geocomposites are an appreciated solution used for moisture protection systems, and as a protecting element of inverted roof installations, so-called green roofs, both in residential and industrial buildings. At the same time, through a high tensile strength and compressive strength properties, the DRENFOL geocomposites are suited for civil engineering structures especially in road and railway construction for drainage systems of roads, embankments, bridge abutments, culverts and tunnels, and for rainwater drainage systems of roadside retention tanks. The DRENFOL geocomposites are also widely used in the construction of rainwater drainage systems of landfill tops.

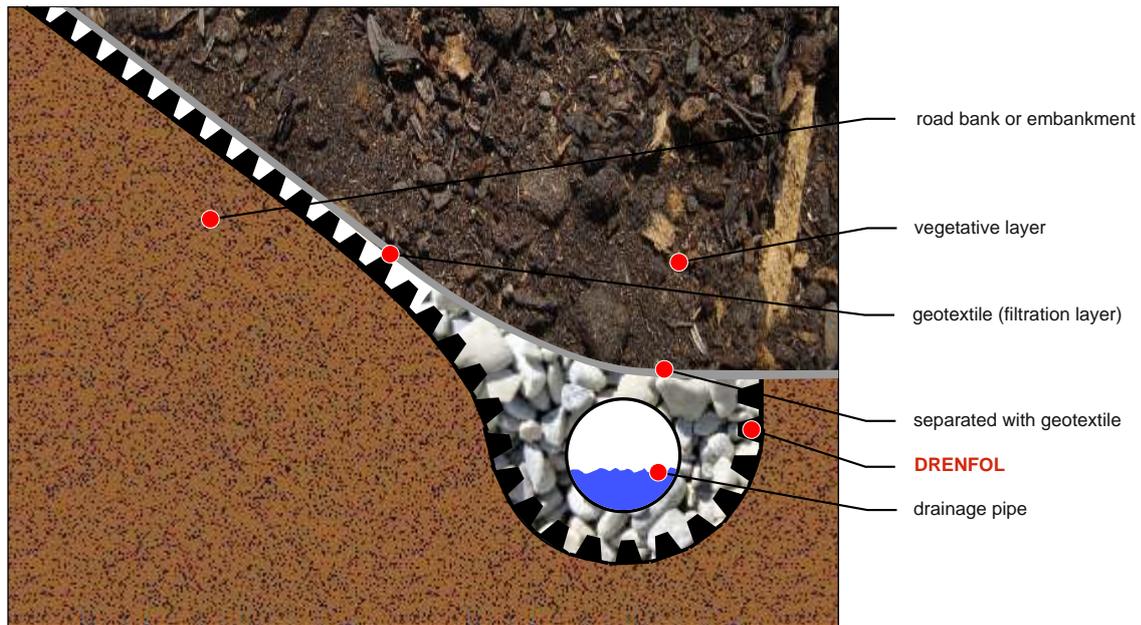


Use in protecting "inverted roofs" (green roofs).

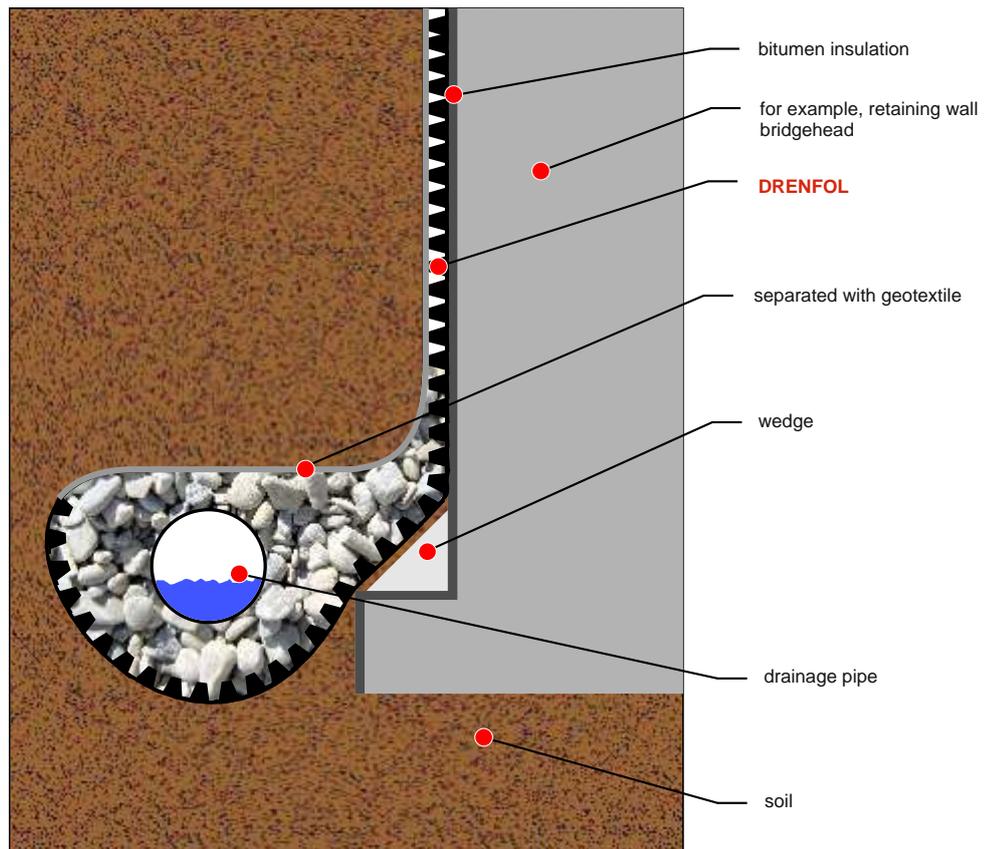


DRENFOL geocomposites used for the moisture protection of tunnels, underground passages, etc.

# APPLICATION OF DRENFOL GEOCOMPOSITES



Application of DRENFOL geocomposites for the construction of sealed bank and road surface dewatering, so-called draining ditches.

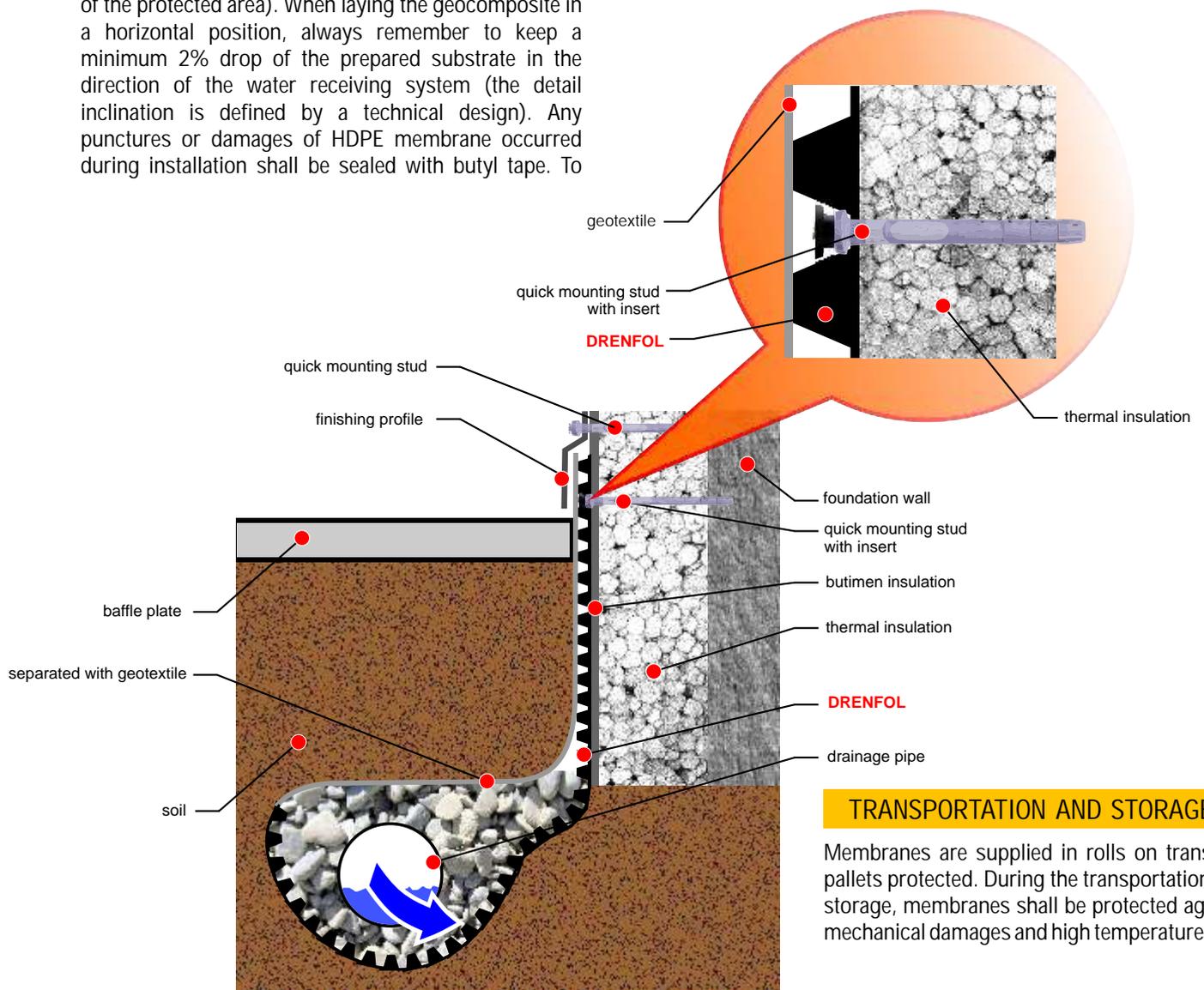


Application of DRENFOL geocomposites for the protection of, for example, vertical bridgeheads.

# INSTALLATION METHOD, TRANSPORTATION AND STORAGE OF DRENFOL GEOMEMBRANES

DRENFOL geocomposite shall be laid with the geotextile toward the soil in case of fastening to any kind of vertical partitions walls. Fix them using steel nails or studs at a spacing of about 60 cm. While joining geocomposite strips, you shall make a so-called modular seam - an overlap of approx. 20 cm width by unsticking the geotextile from one of sheets. Make the joint and re-apply the unsticked piece of the geotextile. Membrane joints and possible punctures shall be sealed with butyl tape. With horizontal installation, the geocomposites shall be laid in the direction of the planned water inflow (outside of the protected area). When laying the geocomposite in a horizontal position, always remember to keep a minimum 2% drop of the prepared substrate in the direction of the water receiving system (the detail inclination is defined by a technical design). Any punctures or damages of HDPE membrane occurred during installation shall be sealed with butyl tape. To

obtain a tight seal joint of bands, make a sealed modular seam. In order to do this, place one or two paths of butyl tape within the overlap area. When using our membranes, you shall always follow the detailed recommendations set out in the technical design of an object. Membranes may be installed in any weather conditions.

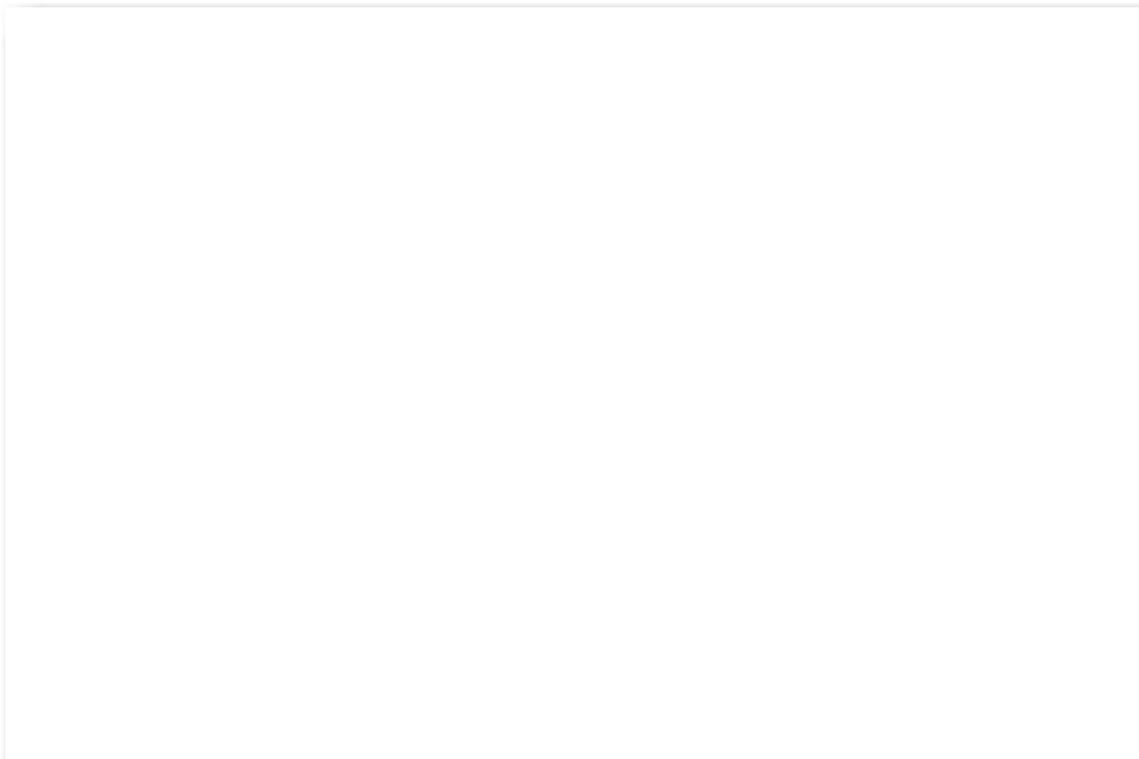


Example of installation of DRENFOL geocomposites to a foundation wall with thermal insulation.

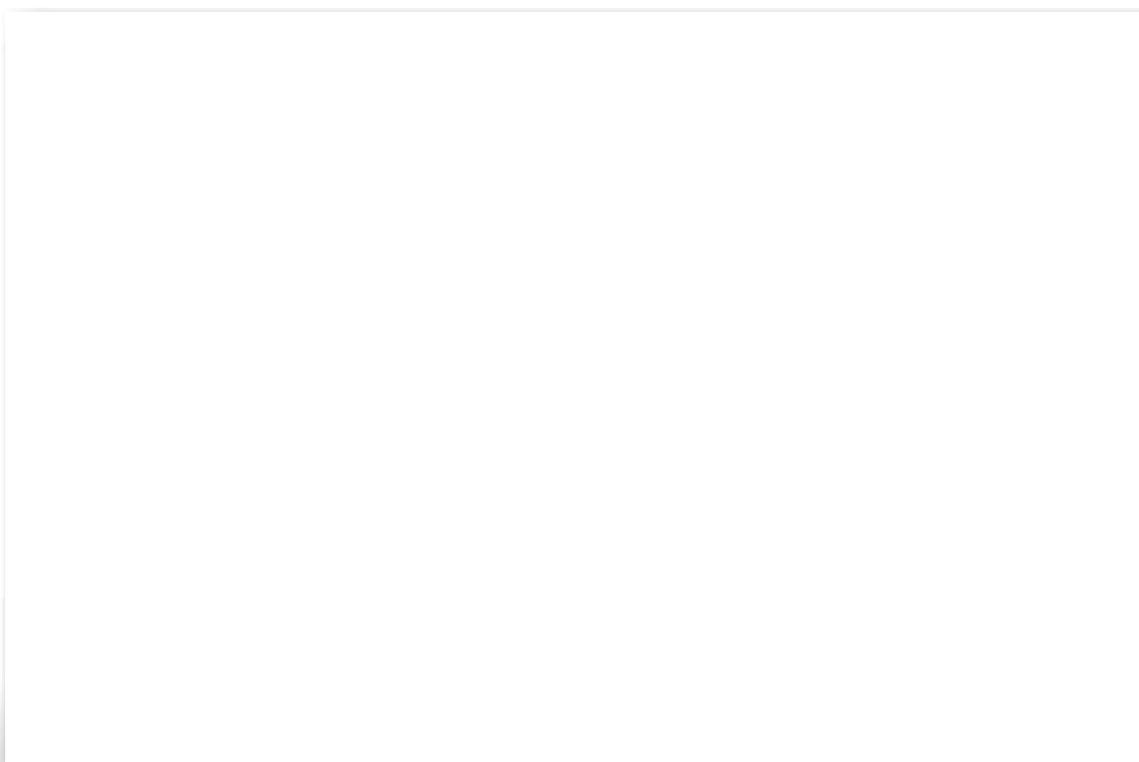
## TRANSPORTATION AND STORAGE

Membranes are supplied in rolls on transport pallets protected. During the transportation and storage, membranes shall be protected against mechanical damages and high temperatures.

## **DRENFOL 500+110**



## **DRENFOL 650+110**



## DATA SHEET

# DRENFOL 500+110

## geocomposite

DRENFOL 500+110 geocomposite, the height of dimples is about 8 mm, HDPE membrane thickness of about 0,5 mm, geotextile PE, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 15 (-1,5)
			CMD 15 (-1,5)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 45 (±5,6)
			CMD 38 (±2,6)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	1,00 (-0,10)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	35 (+7)
Characteristic opening size	PN EN ISO 12956	µm	140 (± 42)
Water permeability normal to the plane of a product $V_{H50}$	EN ISO 11058	m/s	$70 \times 10^{-3}$ ( $-21 \times 10^{-3}$ )
Durability (According to Annex B) resistance to weathering against ageing	PN EN 12224	—	Cover within 2 weeks after application
Durability (According to Annex B) resistance to chemical degradation	PN EN ISO 13438	—	Durability planned for a minimum of 25 years on natural soils with a $4 < \text{pH} < 9$ and a temperature $< 25^{\circ}\text{C}$
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	640 (±65)
Compressive strength	PMS 967252: 2013	kN/m <sup>2</sup>	225 (-21)
Joint - seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## DATA SHEET

# DRENFOL 650+110

## geocomposite

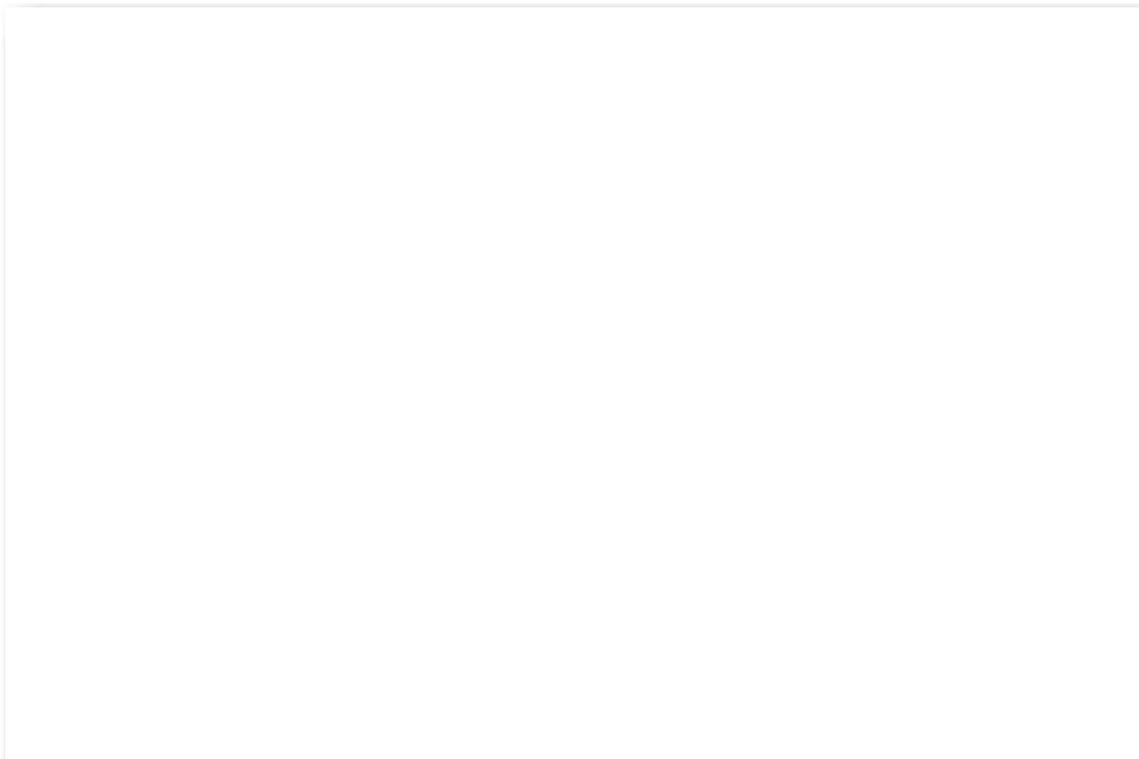
DRENFOL 650+110 geocomposite, the height of dimples is about 8 mm, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 18 (-2,5)
			CMD 17 (-3,0)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 45 (±9,0)
			CMD 33 (±5,0)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	1,00 (-0,10)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	35 (+7)
Characteristic opening size	PN EN ISO 12956	µm	140 (± 42)
Water permeability normal to the plane of a product $V_{H50}$	EN ISO 11058	m/s	$70 \times 10^{-3}$ ( $-21 \times 10^{-3}$ )
Durability (According to Annex B) resistance to weathering against ageing	PN EN 12224	—	Cover within 2 weeks after application
Durability (According to Annex B) resistance to chemical degradation	PN EN ISO 13438	—	Durability planned for a minimum of 25 years on natural soils with a $4 < \text{pH} < 9$ and a temperature $< 25^{\circ}\text{C}$
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	790 (±80)
Compressive strength	PMS 967252: 2013	kN/m <sup>2</sup>	330 (-25)
Joint - seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

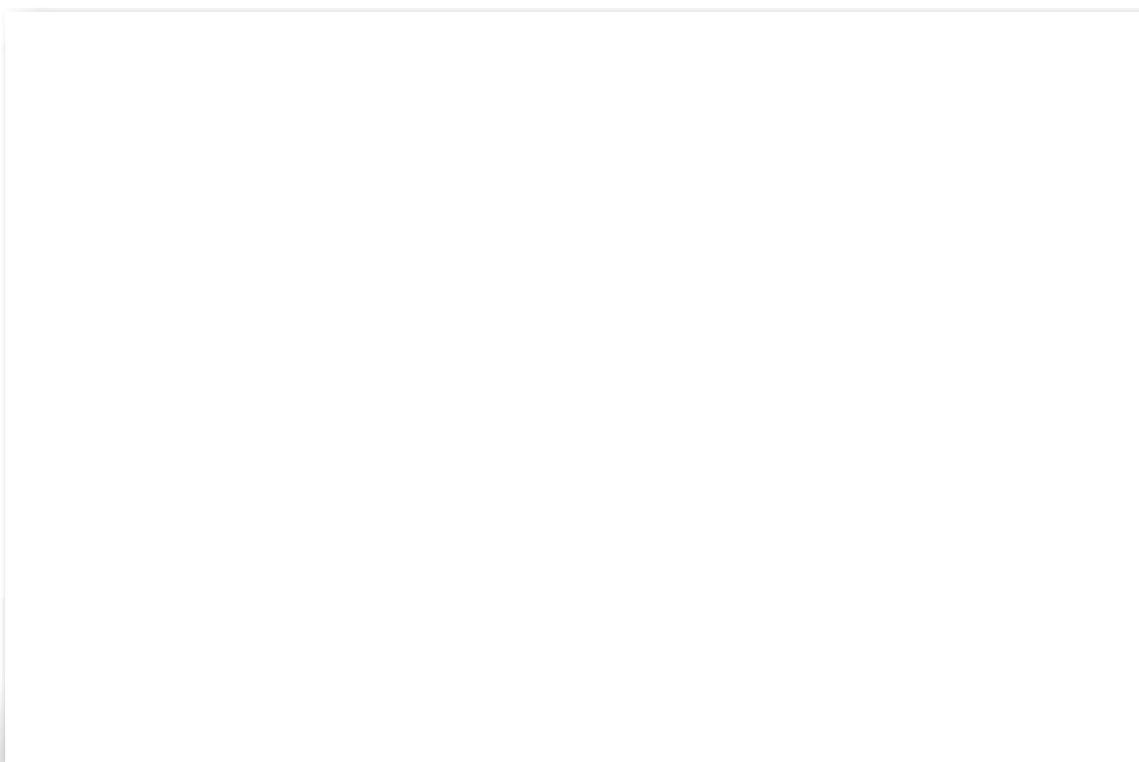
The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## **DRENFOL 850+110**



## **DRENFOL 850+136**



## DATA SHEET

# DRENFOL 850+110

## geocomposite

DRENFOL 850+110 geocomposite, the height of dimples is about 8 mm, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 22 (-2,0)
			CMD 21 (-1,9)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 35 (±8,2)
			CMD 33 (±5,1)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	1,00 (-0,10)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	35 (+7)
Characteristic opening size	PN EN ISO 12956	µm	140 (± 42)
Water permeability normal to the plane of a product $V_{H50}$	EN ISO 11058	m/s	$70 \times 10^{-3}$ ( $-21 \times 10^{-3}$ )
Durability (According to Annex B) resistance to weathering against ageing	PN EN 12224	—	Cover within 2 weeks after application
Durability (According to Annex B) resistance to chemical degradation	PN EN ISO 13438	—	Durability planned for a minimum of 25 years on natural soils with a $4 < \text{pH} < 9$ and a temperature $< 25^\circ\text{C}$
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	990 (±100)
Compressive strength	PMS 967252: 2013	kN/m <sup>2</sup>	630 (-45)
Joint - seam*	Type		Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## DATA SHEET

# DRENFOL 850+136

## geocomposite

DRENFOL 850+136 geocomposite, the height of dimples is about 8 mm, HDPE membrane thickness of about 0,5 mm, geotextile PE, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 22,5 (-3,0)
			CMD 21,5 (-1,5)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 37 (±5)
			CMD 34 (±6)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	1,25 (-0,125)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	29 (+5,8)
Characteristic opening size	PN EN ISO 12956	µm	120 (±36)
Water permeability normal to the plane of a product $V_{H50}$	EN ISO 11058	m/s	$50 \times 10^{-3}$ ( $-15 \times 10^{-3}$ )
Durability (According to Annex B) resistance to weathering against ageing	PN EN 12224	—	Cover within 2 weeks after application
Durability (According to Annex B) resistance to chemical degradation	PN EN ISO 13438	—	Durability planned for a minimum of 25 years on natural soils with a $4 < \text{pH} < 9$ and a temperature $< 25^\circ\text{C}$
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	1015 (±105)
Compressive strength	PMS 967252: 2013	kN/m <sup>2</sup>	645 (-55)
Joint - seam*	Type		Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

# ▶ GEOCOMPOSITES

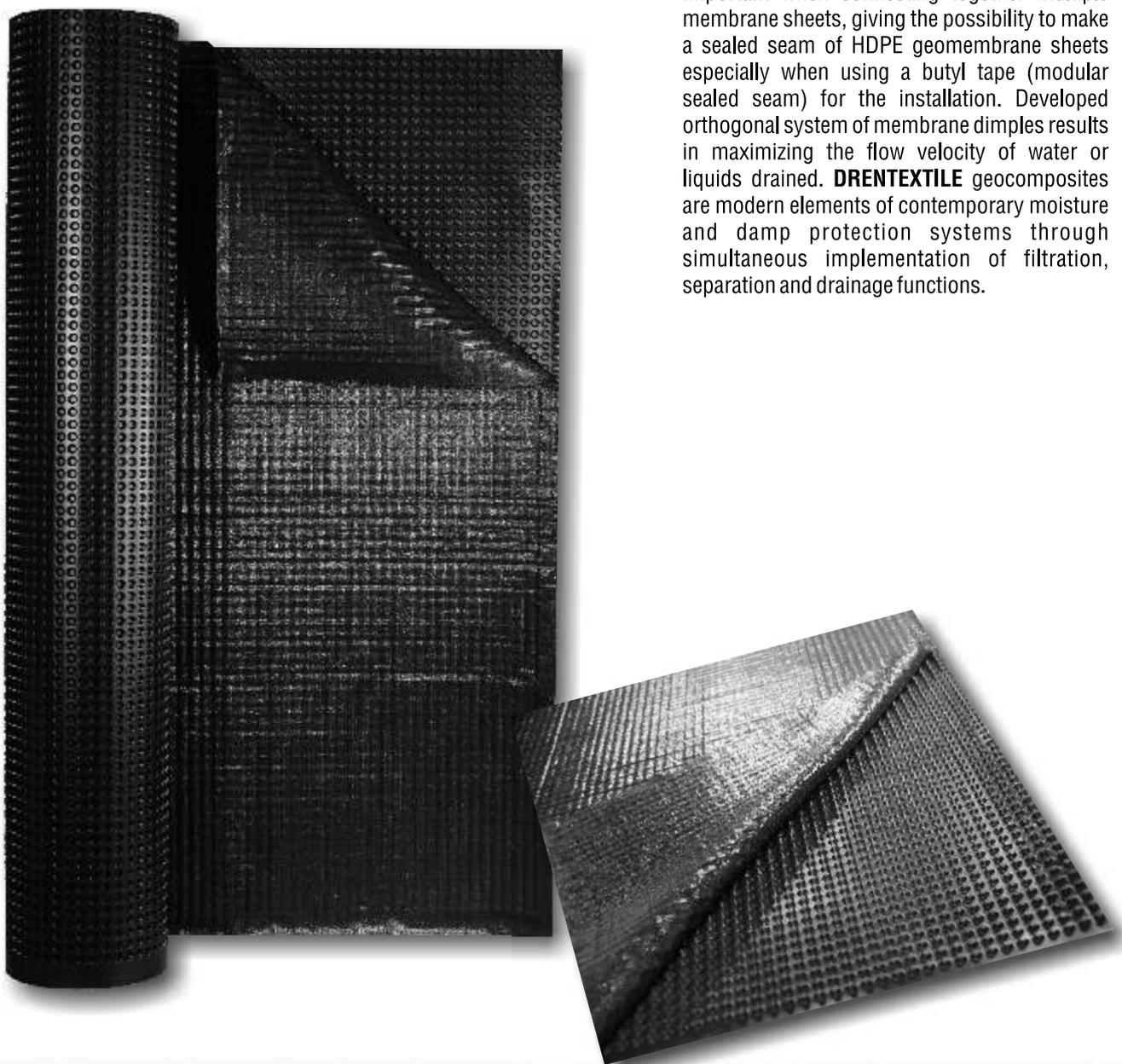
Drentextile



## DRETEXTILE GEOCOMPOSITES

Our **DRETEXTILE** geocomposites were developed by a combination of dimpled HDPE geomembrane of a mass per unit area within the range of 500 to 850 g/m<sup>2</sup> with a special geotextile made of PP fibers of a mass per unit area within the range of 80-200 g/m<sup>2</sup>. Geocomposites are characterized by a very high tensile strength and compressive strength.

The same way as for **DRENFOL** geocomposites, the combination of geocomposite components is carried out by means of hot-melt (non-drying) adhesive, which provides durability of connection at operating conditions, while ensuring disconnection of layers at the stage of installation and re-bonding after installation of, for example, a drainage pipe. This provides protection, within the area of joining strips, against the penetration of soil particles into flow channels, protecting the geocomposite from clogging (silting). This technology is especially important when connecting together multiple membrane sheets, giving the possibility to make a sealed seam of HDPE geomembrane sheets especially when using a butyl tape (modular sealed seam) for the installation. Developed orthogonal system of membrane dimples results in maximizing the flow velocity of water or liquids drained. **DRETEXTILE** geocomposites are modern elements of contemporary moisture and damp protection systems through simultaneous implementation of filtration, separation and drainage functions.



## EXAMPLES OF THE VERSIONS MATERIALS CONSTITUTING A GEOCOMPOSITES DRENTXTEXTILE

Property	Test Method	Unit	650+165	650+130	650+100
Width	PN EN 1848-2	m	2		
Length	PN EN 1848-2	m	According to Customer's order ±0,2		
Tensile strength	PN EN ISO 10319	kN/m	MD 29 (-5,0)	MD 26 (-1,5)	MD 23 (-1,5)
			CMD 28 (-5,0)	CMD 25 (- 1,5)	CMD 20 (-1,7)
			MD 14,7 (+ 3,0)	MD 13 (+ 3,0)	MD 14,5 (+3,0)
			CMD 13 (+ 2,0)	CMD 10 (+2,0)	CMD 11 (+2,0)
Relative elongation at maximum load	PN EN ISO 10319	%	3,2 (- 0,24)	3,2 (- 0,24)	3,2 (-0,24)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	4,5 (-2,0)	3,7 (-0,3)	3,5 (-1,0)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	8,6 (+1,0)	11 (+3,0)	12 (+4,0)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	190 (±50)	248 (±50)	212 (±50)
Characteristic opening size	PN EN ISO 12956	µm			
Water permeability normal to the plane of a product $V_{H50}$	PN EN ISO 11058	m/s	$0,9 \times 10^{-2}$ (-0,4x10 <sup>-2</sup> )	$1,69 \times 10^{-2}$ (-0,5x10 <sup>-2</sup> )	$1,6 \times 10^{-2}$ (-0,6x10 <sup>-2</sup> )
Durability according to Annex B, resistance to chemical degradation	PN EN ISO 13438	%	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C
Durability according to Annex B, resistance to weathering			Cover within 1 day after application	Cover within 1 day after application	Cover within 1 day after application
Dangerous substances	---	---	NPD	NPD	NPD
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	845 (±85)	810 (±85)	780 (±80)
Compressive strenght	PMS967252: 2013	kN/m <sup>2</sup>	325 (-19)	331 (-25)	325 (-18)

### Legend:

MD - properties in the machine direction

CMD - properties in the cross machine direction

The table contains average values of each property from tests made in our company during the period from September 2013 until March 2014. Declared values are included in the Declarations of Performance available in the "Downloads" tab.

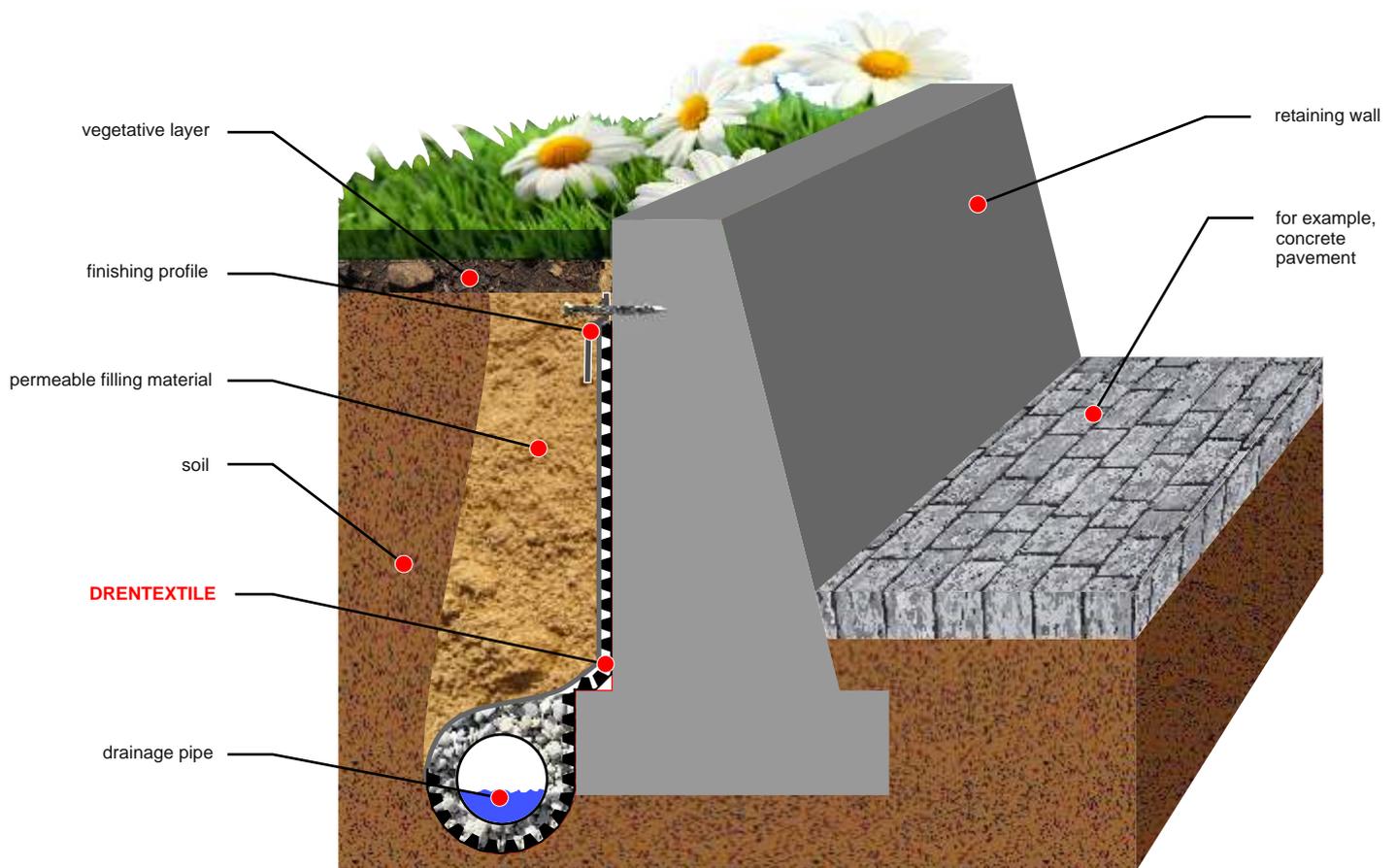
The above data is given with the best of our knowledge, test results, experience and in good faith, but in practice, the differences in materials, methods of product usage, and site conditions, which are beyond our control, may affect the need for verification. Characteristics of a product specified in the data, written recommendations, and other guidelines provided cannot be grounds to assume **PLASTMASTER's** responsibility. It is not our intention to violate any patents or licenses. The current declarations of performance are available on our website.

It is possible to make other composition of geocomposites.

# APPLICATION OF DRENTEXTILE GEOCOMPOSITES

Due to their mechanical properties, separation, drainage and a wide range of filtration capabilities, DRENTEXTILE geocomposites are an appreciated solution used for moisture protection systems, and as a protecting element of inverted roof installations, so-called green roofs, both in residential and industrial buildings. At the same time, through a high tensile strength and compressive strength properties, the DRENTEXTILE

geocomposites are suited for civil engineering structures especially in road and railway construction for drainage systems of roads, embankments, bridge abutments, culverts and tunnels, and for rainwater drainage systems of roadside retention tanks. The DRENTEXTILE geocomposites are also widely used as drainage products in the construction of flood embankments and hydro-geodesic infrastructure.



Application of DRENTEXTILE geocomposites for the protection of a retaining wall.

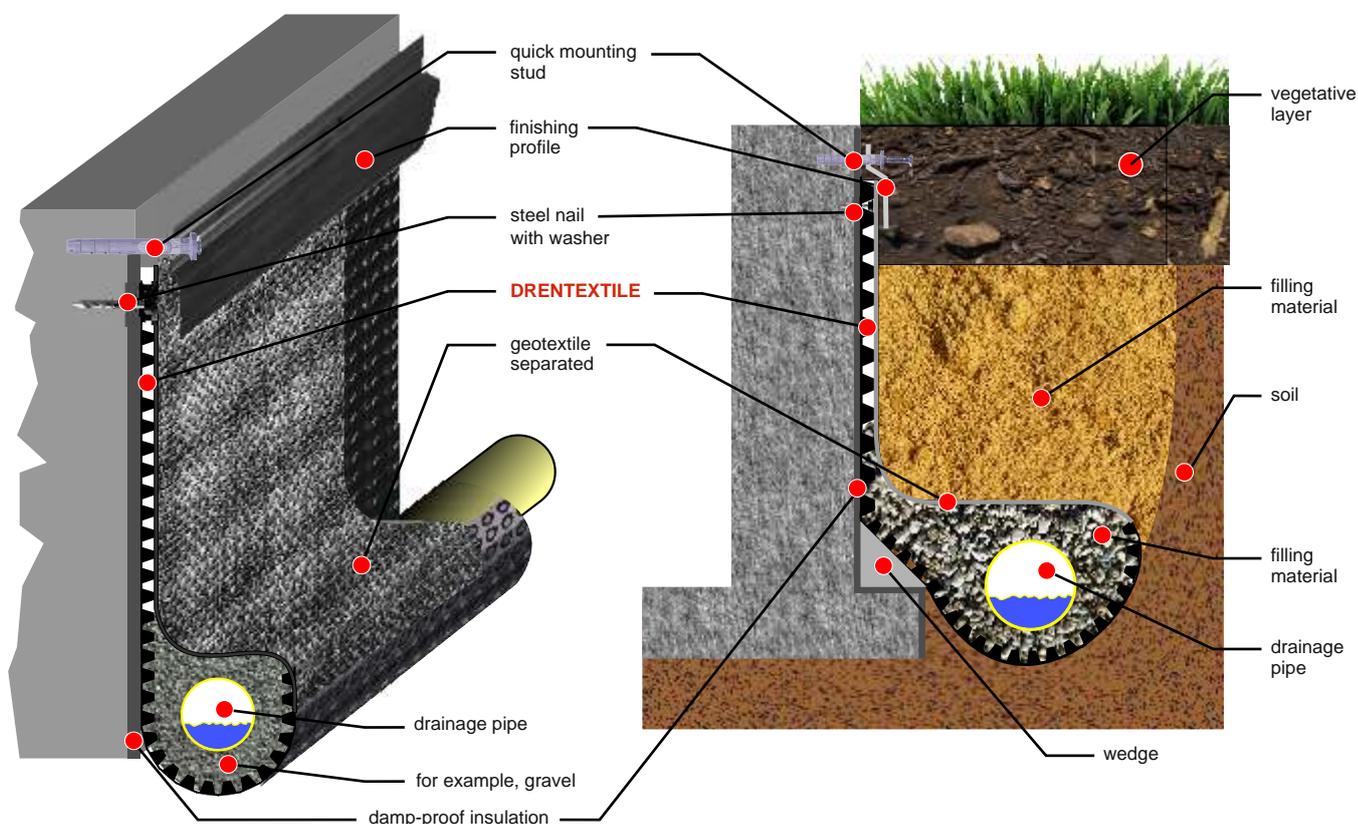
# INSTALLATION METHOD, TRANSPORTATION AND STORAGE OF DRENFOL GEOMEMBRANES

## INSTALLATION METHOD

DRENFOL geocomposite shall be laid with the geotextile toward the soil in case of fastening to any kind of vertical partitions walls. Fix them using steel nails or studs at a spacing of about 60 cm. While joining geocomposite strips, you shall make a so-called modular seam - an overlap of approx. 20 cm width by unsticking the geotextile from one of sheets. Make the joint and re-apply the unsticked piece of the geotextile. Membrane joints and

possible punctures shall be sealed with butyl tape. With horizontal installation, the geocomposites shall be laid in the direction of the planned water inflow (outside of the protected area). When laying the geocomposite in a horizontal position, always remember to keep a minimum 2% drop of the prepared substrate in the direction of the water receiving system (the detail inclination is defined by a technical design). Any punctures or damages of HDPE

membrane occurred during installation shall be sealed with butyl tape. To obtain a tight seal joint of bands, make a sealed modular seam. In order to do this, place one or two paths of butyl tape within the overlap area. When using our membranes, you shall always follow the detailed recommendations set out in the technical design of an object. Membranes may be installed in any weather conditions.

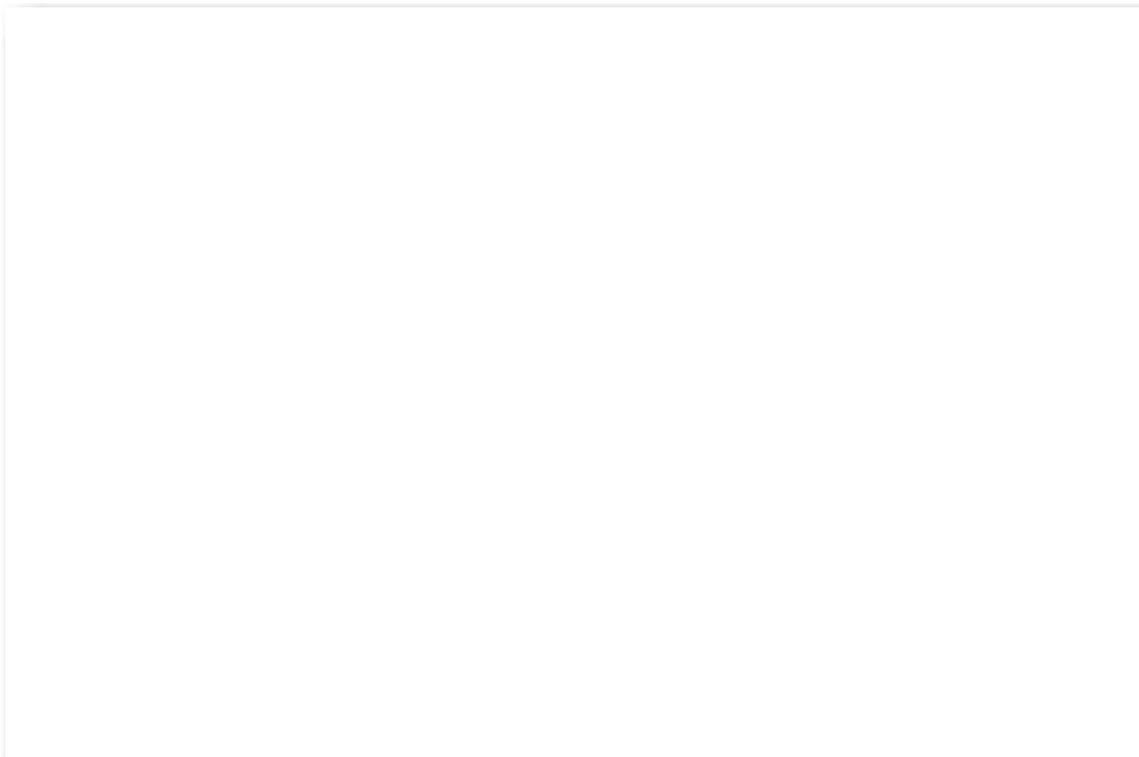


Example of installation of DRENFOL geocomposite in vertical position.

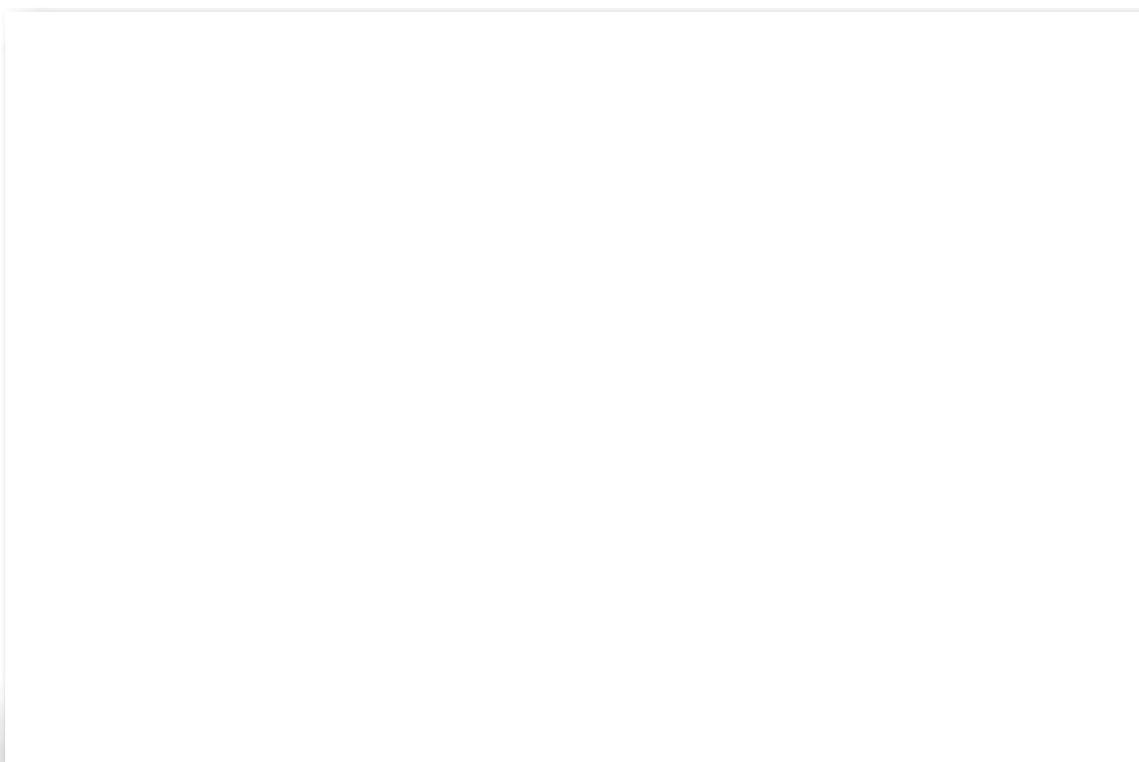
## TRANSPORTATION AND STORAGE

Membranes are supplied in rolls on transport pallets protected. During the transportation and storage, membranes shall be protected against mechanical damages and high temperatures.

## **DRENTEXTILE 650+100**



## **DRENTEXTILE 650+130**



## DATA SHEET

# DRENTEXTILE 650+100

## GEOCOMPOSITE

DRENTEXTILE 650+100 geocomposite, the height of dimples is about 8 mm, HDPE membrane thickness of about 0,5 mm, geotextile PE, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 23 (-1,5)
			CMD 20 (-1,7)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 14,5 (+3,0)
			CMD 11 (+2,0)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	3,5 (-1,0)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	12 (+4,0)
Characteristic opening size	PN EN ISO 12956	µm	212 (±50)
Water permeability normal to the plane of a product V <sub>H50</sub>	PN EN ISO 11058	m/s	1,6x10 <sup>-2</sup> (-0,6x10 <sup>-2</sup> )
Durability (According to Annex B) Resistance to weathering	PN EN 12224	%	Cover within 1 day after application
Durability (According to Annex B) Resistance to chemical degradation	PN EN ISO 13438	%	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C
Dangerous substances	—	—	NPD
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	780 (±80)
Compressive strength	PMS967252:2013	kN/m <sup>2</sup>	325 (-18)
Joint - seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

## DATA SHEET

# DRENTEXTILE 650+130

## GEOCOMPOSITE

DRENTEXTILE 650+130 geocomposite, the height of dimples is about 8 mm, HDPE membrane thickness of about 0,5 mm, geotextile PE, product type F+S+D (filtration, separation, drainage) according to the harmonized standard EN 13252

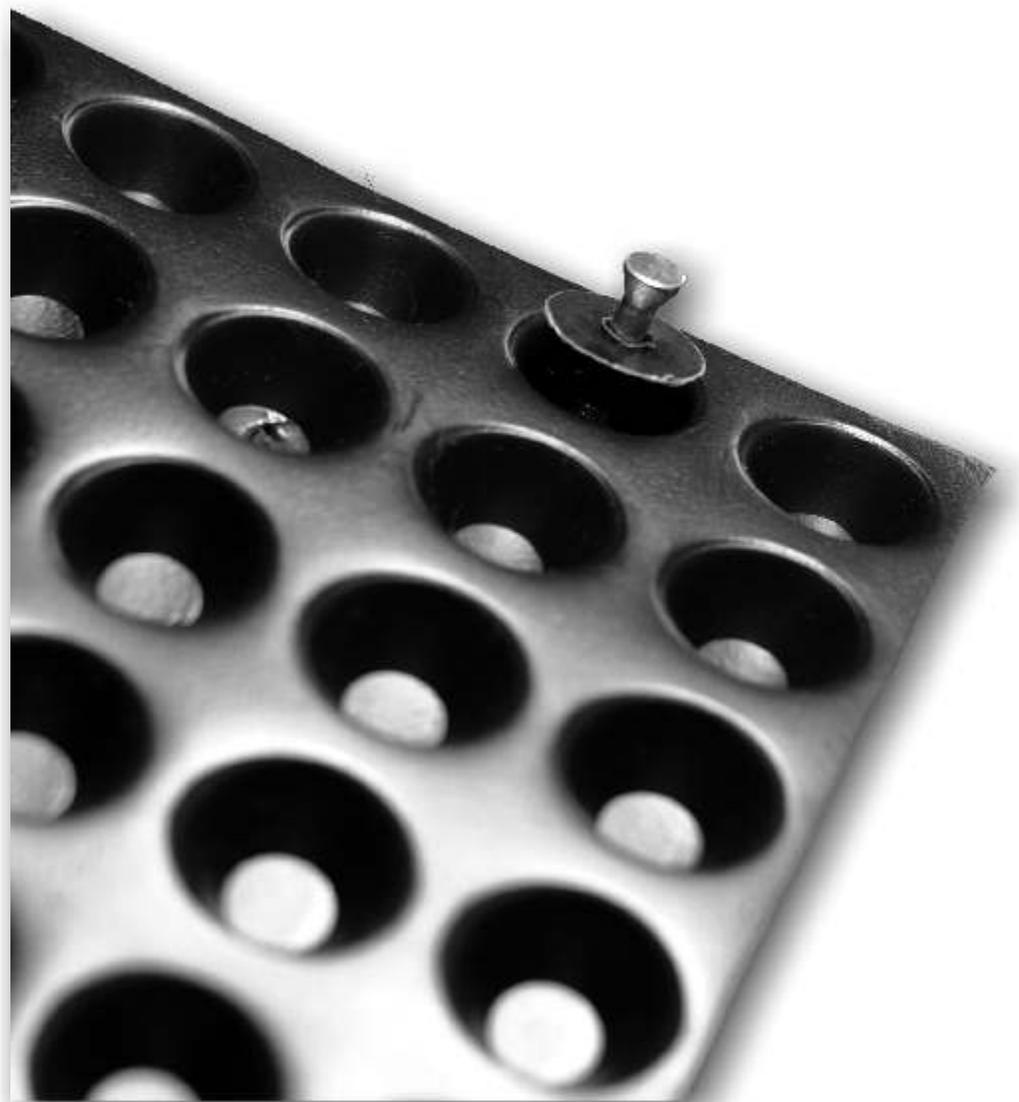
Property	Test Method	Unit	Value
Tensile strength	PN EN ISO 10319	kN/m	MD 26 (-1,5)
			CMD 25 (-1,5)
Relative elongation at maximum load	PN EN ISO 10319	%	MD 13 (+3,0)
			CMD 10 (+2,0)
In-plane water flow capacity of a product 20kPa gradient 1,0	PN EN ISO 12958	l/(ms)	3,2 (-0,24)
Resistance to static puncture (CBR)	PN EN ISO 12236	kN	3,7 (-0,3)
Dynamic perforation resistance (cone drop)	PN EN 13433	mm	11 (+3,0)
Characteristic opening size	PN EN ISO 12956	µm	248 (±50)
Water permeability normal to the plane of a product V <sub>H50</sub>	PN EN ISO 11058	m/s	1,69x10 <sup>-2</sup> (-0,5x10 <sup>-2</sup> )
Durability (According to Annex B) Resistance to weathering	PN EN 12224	%	Cover within 1 day after application
Durability (According to Annex B) Resistance to chemical degradation	PN EN ISO 13438	%	Durability planned for a minimum of 25 years on natural soils with a 4<pH<9 and a temperature <25°C
Dangerous substances	—	—	NPD
Mass per unit area	PN EN ISO 9864: 2007	g/m <sup>2</sup>	810 (±85)
Compressive strength	PM S967252:2013	kN/m <sup>2</sup>	331 (-25)
Joint - seam*	Type	Mechanical modular seam (overlap), approx. 200 mm - Strengthened version: joined sheets additionally glued within the seam area with a double sided adhesive tape - Sealed version: at least 5 mm butyl tape within the seam area	

The table contains average values of each property from tests made during the period from September 2013 until March 2014.

\* The joint made during installation by a contractor.

# ▶ ACCESSORIES

- ▶ Finishing profile
- ▶ Butyl tape
- ▶ Nails with washers



## ACCESSORIES FOR GEOMEMBRANE AND GEOCOMPOSITES



### FINISHING PROFILE

The finishing profile is a special finishing profile made of PVC, prepared for installation together with the **VENTFOL** geomembranes and **DRENFOL** and **DRENTXTILE** geocomposites.

Profile length: 2 m



### STEEL NAILS WITH WASHERS

Nails made of hardened steel suitable for installation of the **VENTFOL** geomembrane and **DRENFOL** and **DRENTXTILE** geocomposites. Included special shaped washers.

Nail dimensions: 3.5 x 45 mm

Package: 100 pieces



### SEALING BUTYL TAPE

Double sided butyl tape with a separating layer of silicone paper.

Dimensions: 15 mm x 25 m

# ▶ **STANDARD DIMENSIONS OF ROLLS AND THEIR PALLETISING**



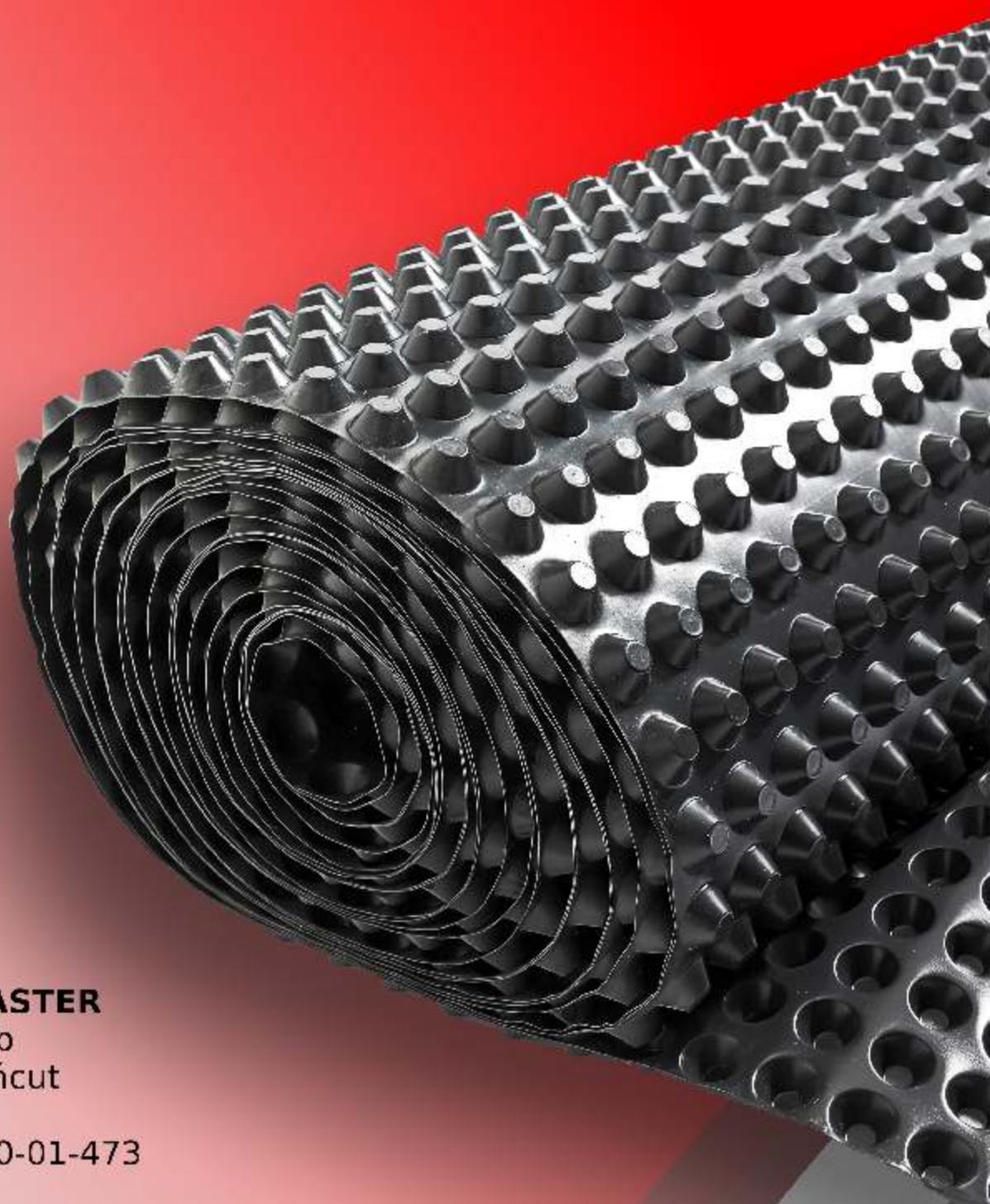
## STANDARD DIMENSIONS OF ROLLS AND THEIR PALLETISING

Type	Product	Standard width of rolls <sup>1</sup> [m]	Standard length of rolls <sup>2</sup> [m]	Maximum number of rolls pallet <sup>3</sup> [m]	
GEOMEMBRANES	VENTFOL	STANDARD	0,5; 1,0; 1,5; 2,0; 2,5 i 3,0	20	0,5 - 48 rolls 1,0 - 24 rolls For other widths po - 12 rolls
		SUPER	0,5; 1,0; 1,5; 2,0; 2,5 i 3,0	20	0,5 - 48 rolls 1,0 - 24 rolls For other widths po - 12 rolls
		STRONG	0,5; 1,0; 1,5; 2,0; 2,5 i 3,0	20	0,5 - 36 rolls 1,0 - 18 rolls For other widths po - 9 rolls
		EXTRA	0,5; 1,0; 1,5; 2,0; 2,5 i 3,0	20	0,5 - 36 rolls 1,0 - 18 rolls For other widths po - 9 rolls
		POWER	0,5; 1,0; 1,5; 2,0; 2,5 i 3,0	20	0,5 - 24 rolls 1,0 - 12 rolls For other widths po - 6 rolls
	HYDROFOL	0,2; 0,25; 0,3; 0,365; 0,4; 0,5; 0,6; 1,0; 1,5	50	0,20; 0,25 - 140 rolls 0,30 - 120 rolls 0,365 - 100 rolls 0,40 - 80 rolls 0,50; 0,60 - 60 rolls 1,0 - 40 rolls 1,5 - 20 rolls	
GEOCOMPOSITES	DRENFOL	2,0	15	6 rolls	
	DRENTXTILE	2,0	15	6 rolls	

1) For widths other than standard ones indicated in the table above, the order must be agreed individually.

2) For lengths other than standard lengths given, the order must be agreed individually.

3) For products of a width greater than 2 m, transport and palletizing shall be agreed individually when ordering.



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