

**MACDRAIN® ARCTIC BLANKET 2091**  
DRAINAGE COMPOSITE

Geocomposite for planar drainage (GCD), realized by thermo-bonding a draining core in extruded monofilaments (GMA) with two filtering nonwoven geotextiles (GTX-N) that may also be working as separation or protecting layers. The three-dimensional draining core presents a "W" configuration as longitudinal parallel channels. Due to the hydrophobic geotextile installed on the bottom side, MacDrain Arctic Blanket is suitable as a permeable capillary break to prevent frost heave.

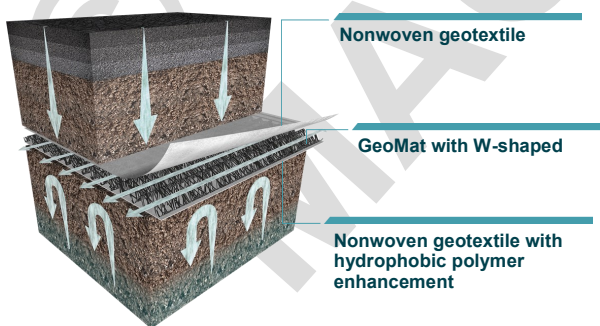
MacDrain®			ARCTIC BLANKET 2091
Geocomposite (GCO)			
Thickness at 2 kPa <sup>(1,3)</sup>	EN ISO 9863-1	mm	9.0 (+/- 10%)
Thickness at 20 kPa <sup>(1,3)</sup>	EN ISO 9863-1	mm	-
Mass per unit area <sup>(1,3)</sup>	EN ISO 9864	g/m <sup>2</sup>	1000 (+/- 10%)
Tensile strength - MD <sup>(2,4)</sup>	EN ISO 10319	kN/m	23.0 (+/- 13%)
In plane flow capacity - MD <sup>(1,2,4,5)</sup>	EN ISO 12958	l/m/s	See table below (+/- 30%)

	Gradient =	Short-term properties			After 20yrs <sup>(5)</sup>	After 100yrs <sup>(5)</sup>
		0.03	0.3	1.0	1.0	1.0
S/S contact <sup>(4)</sup>	20 kPa	0.40	1.49	2.80 <sup>(2)</sup>	-	-
R/S contact <sup>(1,4)</sup>	20 kPa	0.43	1.56	3.03	-	-
	100 kPa	0.35	1.28	2.47	2.27	2.24
	200 kPa	0.23	0.81	1.57	1.35	1.32

External filters (GTX-N)			
Structure: nonwoven geotextiles			
Raw material: UV stabilized polyolefin			Top side Bottom side
Mass per unit area <sup>(1,3)</sup>	EN ISO 9864	g/m <sup>2</sup>	190 (+/- 19%) 125 (+/- 10%)
Thickness at 2 kPa <sup>(1,3)</sup>	EN ISO 9863-1	mm	1.0 (+/- 20%) 0.7 (+/- 30%)
Tensile strength - MD & CMD <sup>(1,4)</sup>	EN ISO 10319	kN/m	15.4 (- 1.5) 8.7 (- 1.1)
Static puncture resistance <sup>(1,4)</sup>	EN ISO 12236	N	2300 (- 10%) 1350 (- 13%)
Dynamic puncture resistance <sup>(1,4)</sup>	EN ISO 13433	mm	23 (+ 4) 40 (+ 5)
Flux normal to the plane <sup>(1,4)</sup>	EN ISO 11058	l/m <sup>2</sup> /s	45 (- 31%) 105 (- 30%)
Characteristic opening size O <sub>90</sub> <sup>(1,4)</sup>	EN ISO 12956	µm	75 (+/- 23) 160 (+/- 32)
Resistance to penetration by water	EN 13562	mm	- 130 (+/- 13)

Draining core (GMA)			
Structure: three-dimensional geomats made by extruded monofilaments set in longitudinal parallel channel configuration			
Raw material: polypropylene UV stabilized by carbon black			
Mass per unit area <sup>(1,3)</sup>	EN ISO 9864	g/m <sup>2</sup>	685 (+/- 10%)

Durability, Environmental and Sustainability properties			
Durable in natural soil with 4<pH<9 and soil temperature <25°C for a minimum service life of <sup>(2)</sup> : 25 years, 50 years (type II), 100 years (type I)			
Content of SVHC <sup>(6)</sup>		%	≤ 0.1%
Global Warming Potential (GWP <sub>100yrs</sub> ) <sup>(6)</sup>	ISO 14025	kg CO <sub>2</sub> -Eq.	≤ 2.33E+00
Eutrophication Potential (EP) <sup>(6)</sup>	EN 15804	kg Phosphate-Eq.	≤ 5.25E-04
Acidification Potential (AP) <sup>(6)</sup>		kg SO <sub>2</sub> -Eq.	≤ 4.75E-03



- (1) Informative value not reported in the DoP;
- (2) Certified value reported in the DoP;
- (3) Nominal value; if not differently indicated a standard 10% tolerance value is admitted;
- (4) Characteristic value corresponds to the mean value deducted the tolerance and correspond to the MARV at 95% of confidence limit.
- (5) Long term properties reported are calculated on the base on long term compressive creep tests run under normal compressive loads from 50 to 500 kPa using both the Stepped Isothermal Method (SIM) of time-temperature superposition (TTS) compressive creep tests and conventional isothermal compressive creep tests performed at room temperature as per ASTM D7361-07:2012 and ISO 25619-1:2008;
- (6) Values reported in the EPD certificate S-P-01470 issued in accordance with EN15804+A1 and ISO14125 to Maccaferri with reference to the MacDrain W product family with validity till December 2023.

Variable width and length according to the project requirements can be available depending on the production plan and the machines availability; please check stock position with the logistic dept. Special products can be manufactured on request for specific projects.



For the optimisation and improvement process of the technical characteristics of the products, the producer reserves the right to modify standards and characteristics of the product without warning. The information contained herein is to the best of our knowledge accurate, but since the circumstances and conditions in which it may be used are beyond our control, we do not accept any liability for any loss or damage, however arising, which results directly or indirectly from the use of such information nor do we offer any warranty or immunity against patent infringement. Specifiers are requested to check the validity of the specification they are using.

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