



# DRAINAGE PRODUCT DATA

## FOR MORE INFORMATION

The specification charts have been provided for comparative purposes only. Designers should contact manufacturers for additional details and to discuss site-specific considerations.

Information on the use and specification of drainage materials is also available from the Geosynthetic Materials Association (GMA).

GMA  
1801 County Rd B West  
Roseville, MN 55113-4061 USA  
+1 651 225 6956  
fax +1 651 631 9334  
lpassus@ifai.com  
www.gmanow.com

## PUBLISHER'S NOTE

All information included in this Specifier's Guide was compiled from information submitted by firms in the geosynthetics industry. Specifications were submitted voluntarily and their accuracy is the responsibility of the manufacturer. The appearance of a listing in this directory is not an endorsement of the company or product by *Geosynthetics* magazine or the Industrial Fabrics Association International (IFAI). The Specifier's Guide is intended as a guide, and *Geosynthetics* and IFAI encourage readers to contact the companies listed for further information.

Geonets, sheet drains, edge drains, and prefabricated vertical drains are all designed to offer strong, performance-enhancing alternatives to traditional drainage systems.

**G**eocomposite drainage systems are engineered to minimize costly, conventional graded-aggregate and/or perforated-pipe subsurface drainage systems. Geonets, sheet drains, pavement edge drains, and prefabricated vertical drains (PVDs) have reached acceptance as state-of-the-practice because they provide sufficient in-place drainage and offer reduced material cost, installation time, and design complexity over traditional systems.

The selection and design criteria for this category of products are generally simple. However, because of the numerous applications for subsurface drainage systems and varying performance parameters, designers must pay careful attention to the product-performance parameters applicable to a particular subsurface drainage application.

New drainage products are being developed rapidly. Though other products are available, the following charts are separated into four general use categories.

## The numbers

Companies that submitted product data chart lines were asked to provide data determined through industry-accepted testing methods. Companies signed a certificate of compliance verifying the accuracy of this data.

Product Name	Structure [1]	Core/Net/Mesh Polymer Composition [2]	Geotextile Attached (Y/N) [3]	Width/Length m (ft)	Core/Net/Mesh [4] Thickness ASTM D5199 mm (mil)	Compressive Strength at yield ASTM D1621 kPa (psi)	Transmissivity ASTM D4716-87 [5]	
							Gradient = 0.1 Pressure = 10kPa 209 lb/ft <sup>2</sup>	Gradient = 1.0 Pressure = 479kPa 10,000 lb/ft <sup>2</sup>
							m <sup>2</sup> /s (gal/min/ft)	m <sup>2</sup> /s (gal/min/ft)
<b>DRAINTUBE ST0.5 D20</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 3/4" diam.	NA	2.5 x 10 <sup>-4</sup> †	2.5 x 10 <sup>-4</sup> †
<b>DRAINTUBE ST1 D20</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 3/4" diam.	NA	5.0 x 10 <sup>-4</sup> †	5.0 x 10 <sup>-4</sup> †
<b>DRAINTUBE ST2 D20</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 3/4" diam.	NA	1.0 x 10 <sup>-3</sup> †	1.0 x 10 <sup>-3</sup> †
<b>DRAINTUBE ST1 D25</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 1" diam.	NA	1.0 x 10 <sup>-3</sup> †	1.0 x 10 <sup>-3</sup> †
<b>DRAINTUBE ST2 D25</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 1" diam.	NA	2.0 x 10 <sup>-3</sup> †	2.0 x 10 <sup>-3</sup> †
<b>DRAINTUBE ST4 D25</b>	O/C	PP	Y, nonwoven needlepunched 6 to 16 oz	3.98 (13.1)/75 (246)	pipe 1" diam.	NA	4.0 x 10 <sup>-3</sup> †	4.0 x 10 <sup>-3</sup> †

† Gradient 0.1, sand boundary and a seating time of 100 hours

## Agru America Inc. | www.agruamerica.com

<b>AgruNet 200</b>	GN	PE	N	4.42/91.44 (14.5 x 300)	5.1(200)	NP	NP	2 x 10 <sup>-03</sup> (9.66)
<b>AgruNet SS 200</b>	O/C	PP/PE	Y, nonwoven	4.42 (14.5) x various	5.1(200)	NP	NP	1 x 10 <sup>-03</sup> (4.8)
<b>AgruNet DS 200</b>	O/C	PP/PE/PP	Y, nonwoven	4.42 (14.5) x various	5.1(200)	NP	NP	1 x 10 <sup>-04</sup> (0.5)
<b>AgruNet 250</b>	GN	PE	N	4.42/91.44 (14.5 x 300)	6.35 (250)	NP	NP	3 x 10 <sup>-03</sup> (14.49)
<b>AgruNet DS 250</b>	O/C	PP/PE/PP	Y, nonwoven	4.42 (14.5) x various	6.35 (250)	NP	NP	5 x 10 <sup>-04</sup> (2.4)
<b>AgruNet 300</b>	GN	PE	N	4.42/91.44 (14.5 x 300)	7.6 (300)	NP	NP	8 x 10 <sup>-03</sup> (38.64)
<b>AgruNet DS 300</b>	O/C	PP/PE/PP	Y, nonwoven	4.42 (14.5) x various	7.6 (300)	NP	NP	9 x 10 <sup>-04</sup> (4.3)

- [1] GN = Geonet  
O/C = Other or combination
- [2] HDPE = High Density polyethylene  
PP = Polypropylene  
NP = Not provided by manufacturer
- [3] If "Y", specify woven or nonwoven.
- [4] Thickness includes attached geotextile, when applicable
- [5] Seating time is 15 min. and flat-plate environment.

- [A] 1000 lb/ft<sup>2</sup> Pressure, and sand boundary, and a seating time of 100 hrs
- [B] Gradient 0.1 and a seating time of 100 hrs
- [C] 15,000 lbs/ft<sup>2</sup> and sand boundary
- [D] Gradient 0.02, double intrusion, at 5 lb/ft<sup>2</sup>, and a seating time of 100 hrs
- [E] Gradient 0.02, double intrusion at 15 lb/ft<sup>2</sup>, and a seating time of 100 hrs
- [F] Gradient=0.02, 15,000 lb/ft<sup>2</sup> pressure
- [G] Sand boundary, and a seating time of 1 hr
- [H] Gradient=0.02, 1,000 lb/ft<sup>2</sup> pressure

NP = Data not provided by manufacturer  
NA = Not applicable, per manufacturer

« Geosynthetics recommends you contact the manufacturers before making any specifying/purchasing decisions »

Product Name	Structure [1]	Core/Net/Mesh Polymer Composition [2]	Geotextile Attached (Y/N) [3]	Width/Length m (ft)	Core/Net/Mesh [4] Thickness ASTM D5199 mm (mil)	Compressive Strength at yield ASTM D1621 kPa (psi)	Transmissivity ASTM D4716-87 [5]	
							Gradient = 0.1 Pressure = 10kPa 209 lb/ft <sup>2</sup>	Gradient = 1.0 Pressure = 479kPa 10,000 lb/ft <sup>2</sup>
							m <sup>2</sup> /s (gal/min/ft)	m <sup>2</sup> /s (gal/min/ft)

## GSE Environmental | www.gseworld.com

GSE HyperNet Geonet	GN-HDPE	PE	N	4.6 (15) / 76 (250)	7.6 (300)	NP	8 x 10 <sup>-3</sup> (38)	2 x 10 <sup>-3</sup> (10)
GSE TRxNet Geonet	GN-HDPE	PE	N	4.6 (15) / 60 (200)	7.6 (300)	NP	NP	3 x 10 <sup>-3</sup> (15)
GSE PermaNet Geonet	GN-HDPE	PE	N	4.6 (15) / 60 (200)	7.6 (300)	NP	NP	4 x 10 <sup>-3</sup> (19.3)
GSE FabriNet Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15) / 57.9 (190)	7.6 (300)	NP	2 x 10 <sup>-3</sup> (10)	5 x 10 <sup>-4</sup> (2)
GSE TRxNet Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15) / 42.7 (140)	7.6 (300)	NP	4.4 x 10 <sup>-3</sup> (20) [A]	1.0 x 10 <sup>-3</sup> (13.8) [B] [C]
GSE PermaNet Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15) / 45.7 (150)	7.6 (300)	NP	NP	1.3 x 10 <sup>-3</sup> (6.2) [B] [C]
GSE DuraFlow Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5) / 61 (200)	8.4 (330)	NP	NP	5 x 10 <sup>-3</sup> (24) [F] [G]
GSE TenFlow Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5) / 61 (200)	8.9 (350)	NP	NP	6.5 x 10 <sup>-3</sup> (31) [A] [G]
GSE TenDrain Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5) / 61 (200)	7.6 (300)	NP	NP	7 x 10 <sup>-3</sup> (33) [H] [G]
GSE AirMax Geocomposite (Gas Venting)	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5) / 61 (200)	8.4 (330)	NP	NP	NP
GSE BioDrain Geocomposite	O/C	PP/PE/PP	Y, woven & nonwoven	4.4 (14.5) / 70.1 (230)	5 (200)	NP	5 x 10 <sup>-4</sup> (2)	1 x 10 <sup>-4</sup> (0.5) [B]
GSE MineDrain Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15) / 45.7 (150)	8.4 (330)	NP	NP	NP
GSE CoalDrain Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15) / 48.8 (160)	7.6 (300)	NP	NP	9 x 10 <sup>-4</sup> (4.3) [B]

GSE Geonets and Geocomposites are available in other thicknesses

## J-Drain | www.j-drain.com

J-Drain 300	GN-HDPE	PE	Y, needlepunched nonwoven 4 to 16 oz	w: 4' (1.22) & 7' (2.13) l: 75' (22.86) & 150' (45.72)	6.35 (250)	1,915 kPa (40,000 psi)	NP	NP
J-Drain 302	GN-HDPE	PE	Y, needlepunched nonwoven 4 to 16 oz	w: 4' (1.22) & 7' (2.13) l: 75' (22.86) & 150' (45.72)	6.35 (250)	1,915 kPa (40,000 psi)	NP	NP
J-Drain 1000	GN-HDPE	PE	Y, spunbond nonwoven	4' (1.22)/50' (15.24)	6.35 (250)	1,915 kPa (40,000 psi)	NP	NP

## SKAPS Industries | www.skaps.com

TN 220	GN	PE	N	4.4/91.7 (14.5/300)	5.5 ± 0.5 (220 ± 20)	NP	5.0 x 10 <sup>-3</sup> (2.41)	1.2 x 10 <sup>-3</sup>
TN 220 D/L 6,8	O/C	PP/PE/PP	Y, nonwoven	4.3/varies (14/varies)	NP	NP	3.0 x 10 <sup>-4</sup> m <sup>2</sup> /sec	1 x 10 <sup>-4</sup> (0.05)
TN 270 D/L 6,8	O/C	PP/PE/PP	Y, nonwoven	4.3/varies (14/varies)	NP	NP	1 x 10 <sup>-3</sup> (0.48)	5 x 10 <sup>-4</sup> (0.24)
TN 330 D/L 6,8	O/C	PP/PE/PP	Y, nonwoven	4.3/varies (14/varies)	NP	NP	2.5 x 10 <sup>-3</sup> (1.2)	1 x 10 <sup>-3</sup>

## Tensor International Corp. | www.tensorcorp.com

Roadrain T5	O/C	HDPE	6 oz/yd2, nonwoven	3.8/61 (12.75/200)	7.10 (280)	NP	NA	1.5 x 10 <sup>-3</sup> †
Roadrain T7	O/C	HDPE	8 oz/yd2, nonwoven	3.8/61 (12.75/200)	7.6 (300)	NP	NA	1.5 x 10 <sup>-3</sup> ††

† Loading: 5,000 psf; Boundary Conditions: steel plate/ottawa sand/geocomposite/ottawa sand/ steel plate; Gradient: 2.0%; Seating Period: 1 hour  
 †† Loading: 15,000 psf; Boundary Conditions: steel plate/ottawa sand/geocomposite/ottawa sand/ steel plate; Gradient: 2.0%; Seating Period: 1 hour

- [1] GN = Geonet  
 O/C = Other or combination  
 [2] HDPE = High Density polyethylene  
 PE = Polyethylene  
 PP = Polypropylene  
 PS = Polystyrene  
 NP = Not provided by manufacturer  
 O/C = Other or combination  
 [3] If "Y", specify woven or nonwoven.  
 [4] Thickness includes attached geotextile, when applicable  
 [5] Seating time is 15 min. and flat-plate environment.

- [A] 1000 lb/ft<sup>2</sup> Pressure, and sand boundary, and a seating time of 100 hrs  
 [B] Gradient 0.1 and a seating time of 100 hrs  
 [C] 15,000 lbs/ft<sup>2</sup> and sand boundary  
 [D] Gradient 0.02, double intrusion, at 5 lb/ft<sup>2</sup>, and a seating time of 100 hrs  
 [E] Gradient 0.02, double intrusion at 15 lbs/ft<sup>2</sup>, and a seating time of 100 hrs  
 [F] Gradient=0.02, 15,000 lb/ft<sup>2</sup> pressure  
 [G] Sand boundary, and a seating time of 1 hr  
 [H] Gradient=0.02, 1,000 lb/ft<sup>2</sup> pressure

NP = Data not provided by manufacturer  
 NA = Not applicable, per manufacturer

« Geosynthetics recommends you contact the manufacturers before making any specifying/purchasing decisions »

Product Name	Structure [1]	Core/Net/Mesh Polymer and/or Composition [2]	Geotextile Type W or NW	Dimensional Properties		Compressive Strength ASTM D1621 kPa (psi)/% deflection at yield	Transmissivity [3] ASTM D4716
				Width/Length m (ft)	Core/Net/Mesh Thickness ASTM D5199 mm (mil)		Gradient = 0.1 Pressure = 68.9 kPa (10 psi)
m <sup>3</sup> /sec-m (gal/min/ft)							
<b>Drainage Products Inc.</b>   <a href="http://www.drainaway.com">www.drainaway.com</a>							
Drain Away HHF-8000	DCC	HIPS	NW	0.30-0.46/ 6.10-30.5 (1-1.5/20-100)	25.5 (1000)	383 (55.6)	0.0031 (15)
Drain Away Highway Edge Drain	SDC	HIPS	NW	0.15-0.90/30.5-152.5 (0.5-3.0/100-500)	25.5 (1000)	358 (52)	0.0043 (21)
<b>J-Drain</b>   <a href="http://www.j-drain.com">www.j-drain.com</a>							
J-Drain SWD	SCC	O/C	NW	0.152 - 1.22/ 50.29 - 152.4 (0.5 - 4.0/165-500)	25.4 (1000)	527 (79)	NP
J-Drain MVP	SCC	PE	NW	0.152 - 1.22/ 50.29 - 152.4 (0.5 - 4.0/165-500)	25.4 (1000)	527 (79)	NP

[1] SCC = Single cusped core  
 DCC = Double cusped core  
 EC = Enclosed core  
 NW = Nonwoven  
 P = Needle punched  
 SDC = Single dimpled core

[2] HIPS = Hip impact polystyrene  
 O/C = Other or combination

[3] Seating time is 15 min. and  
 flat-plate environment.

Product Name	Core Structure [1]	Core Polymer [2]	Geotextile Filter		Dimensional Properties		Composite Wide With Tensile ASTM D4595 [4] kN/m	Discharge Capacity Gradient = 1.0 ASTM D4716 [5]	
			Polymer [2]	Type [3]	Width/Length m (ft)	Composite Thickness ASTM D5199 mm (mil)		Confining Stress	
								10 kPa m <sup>3</sup> /s	300 kPa m <sup>3</sup> /s
<b>Bonar Inc.</b>   <a href="http://www.bonar.com">www.bonar.com</a>									
Colbondrain CX1000	CC	PP	PP	NWNP	0.1/280	4	25	NP	NP

[1] SDC = Single dimpled core  
 CC = Channel core  
 EM = Entangled mesh

[2] PE = Polyethylene  
 PP = Polypropylene  
 PET = Polyester

[3] NWNP = Nonwoven needle punch  
 NW = Nonwoven  
 O/C = Other or combination

[4] Test performed on composite and not just the core

[5] Flat plates

[A] Test modified as follows:  $i=0.1$ , confirming stress=350 kPa, PVD within sand-bentonite soil layer, between flat plates.

Product Name	Structure [1]	Core/Net/Mesh Polymer and/or Composition [2]	Geotextile Type W or NW	Dimensional Properties		Compressive Strength ASTM D1621 kPa (psi)/ % deflection at yield	Transmissivity [3] ASTM D4716	
				Width/Length m (ft)	Core/Net/Mesh Thickness ASTM D5199 mm (mil)		Gradient = 0.1 Pressure = 37.9 kPa (5 psi)	Gradient = 1.0 Pressure = 100 kPa (14.5 psi)
							m <sup>2</sup> /sec-m (gal/min/ft)	m <sup>2</sup> /sec-m (gal/min/ft)
<b>Bonar Inc.</b>   <a href="http://www.bonar.com">www.bonar.com</a>								
Enkadrain 3811	EM	PP	NW	1/30.5 (3.25/100) & 2/15.25 (6.5/50)	11.4 (449)	NA	NP	15.9
<b>Drainage Products Inc.</b>   <a href="http://www.drainaway.com">www.drainaway.com</a>								
Drain Away 50	SDC	HIPS	NW	1.2/31.80 (4/104)	11.1 (438)	718 (104)	0.0017 (8)	0.003 (16)
Drain Away Edge/Strip	DCC	HIPS	NW	0.15-0.46/3-30 (0.5-1.5/10-100)	15.8 (620)	239 (35)	0.001 (5)	0.002 (10)
Drain Away Panel	DCC	HIPS	NW	0.6-1.5/3-15.3 (2-5/10-50)	15.8 (620)	239 (35)	0.001 (5)	0.002 (10)
<b>J-Drain</b>   <a href="http://www.j-drain.com">www.j-drain.com</a>								
J-Drain 200a series	SSC	PP	NW & W	1.2, 1.98 & 2.44 /15.2 (4', 6.5 & 8' x 50') custom avail.	10.16 (400)	527 (76.4)	0.00085 (4.25)	0.0037 (18)
J-Drain 400a series	SSC	PP	NW & W	1.2, 1.98 & 2.44 /15.2 (4', 6.5 & 8' x 50') custom avail.	10.16 (400)	718 (104.2)	0.0010 (5)	0.0043 (21)
J-Drain 500	SSC	PP	NW	1.2 /15.2 (4' x 50') custom avail.	10.16 (400)	718 (104.2)	0.0010 (5)	0.0043 (21)
J-Drain 700a series	SSC	PP	NW & W	1.2, 1.98 & 2.44 /15.2 (4', 6.5 & 8' x 50') custom avail.	10.16 (400)	1005 (145.8)	0.0011 (5.5)	0.0047 (23)
J-Drain 900a series	SSC	PP	NW & W	1.2, 1.98 & 2.44 /15.2 (4', 6.5 & 8' x 50') custom avail.	10.16 (400)	1580 (229.2)	0.0012 (5.8)	0.0049 (24)

[1] SCC = Single cusped core  
 DCC = Double cusped core  
 SDC = Single dimpled core  
 EM = Entangled mesh

[2] HDPE = High density polyethylene  
 PE = Polyethylene  
 PP = Polypropylene  
 PS = Polystyrene  
 HIPS = Hip impact polystyrene  
 O/C = Other or combination

[3] Seating time is 15 min. and flat-plate environment.  
 NP = Data not provided by manufacturer  
 NA = Not applicable, per manufacturer  
 \* = Special order