



DRAINAGE MATERIALS

PRODUCT DATA

FOR MORE INFORMATION

Geosynthetics magazine has provided information on the drainage material specification charts 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).

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PUBLISHER'S NOTE

Geosynthetics magazine compiled all information included in the *2018 Geosynthetics Specifier's Guide* from information submitted by firms in the geosynthetics industry. Companies provided specifications voluntarily, and specification 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 *2018 Geosynthetics Specifier's Guide* is intended as a guide, and *Geosynthetics* magazine and IFAI encourage readers to contact the companies listed for further information.

Manufacturers design drainage materials such as geonets, sheet drains, pavement edge drains and prefabricated vertical drains to offer strong, performance-enhancing alternatives to traditional drainage systems.

Companies engineer geocomposite drainage systems 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 ASTM D6364 kPa (psi)/% deflection at yield*	Transmissivity ASTM D4716-87 [5]	
							Gradient = 0.1 Pressure = 10kPa 209 lb/ft ²	Gradient = 1.0 Pressure = 479kPa 10,000 lb/ft ²
							m ² /s (gal/min/ ft)	m ² /s (gal/min/ft)

Afitex-Texel | www.afitex-texel.ca

DRAINTUBE ST0.5 D20	O/C	PP	Y nonwoven needlepunched 4 to 16 oz	3.98 (13.1)/75 (246)	pipes 3/4" diam. on 80" centers	NA	2.5 x 10-4 (1.21) [A]	NP
DRAINTUBE ST1 D20	O/C	PP	Y nonwoven needlepunched 4 to 16 oz	3.98 (13.1)/75 (246)	pipes 3/4" diam. on 40" centers	NA	5.0 x 10-4 (2.42) [A]	NP
DRAINTUBE ST1 D25	O/C	PP	Y nonwoven needlepunched 4 to 16 oz	3.98 (13.1)/75 (246)	pipes 1" diam. on 40" centers	NA	1.0 x 10-3 (4.83) [A]	NP
DRAINTUBE ST2 D25	O/C	PP	Y nonwoven needlepunched 4 to 16 oz	3.98 (13.1)/75 (246)	pipes 1" diam. on 20" centers	NA	2.0 x 10-3 (9.66) [A]	NP
DRAINTUBE ST4 D25	O/C	PP	Y nonwoven needlepunched 4 to 16 oz	3.98 (13.1)/75 (246)	pipes 1" diam. on 10" centers	NA	4.0 x 10-3 (19.32) [A]	NP

[A] Gradient 0.1; Between sealed sand and geomembrane; Seating Time 100 hours; Pressure 50 000 psf

AGRU America Inc. | www.agruamerica.com

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

[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.

NP = Data not provided by manufacturer
 NA = Not applicable, per manufacturer
 ♦ Specification Change— this specification (D1621) changed in the 2017 Specifier's Guide.
 From: Compressive Strength at yield ASTM D1621 kPa (psi)
 To: Compressive Strength at yield per ASTM D6364 units kPa (psi)

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 ASTM D6364 kPa (psi)/% deflection at yield*	Transmissivity ASTM D4716-87 [5]	
							Gradient = 0.1 Pressure = 10kPa 209 lb/ft ²	Gradient = 1.0 Pressure = 479kPa 10,000 lb/ft ²
							m ² /s (gal/min/ft)	m ² /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 ⁻³ (38)	2 x 10 ⁻³ (10)
GSE TRxNet Geonet	GN-HDPE	PE	N	4.6 (15)/60 (200)	7.6 (300)	NP	NP	3 x 10 ⁻³ (15)
GSE PermaNet Geonet	GN-HDPE	PE	N	4.6 (15)/60 (200)	7.6 (300)	NP	NP	4 x 10 ⁻³ (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 ⁻³ (10)	5 x 10 ⁻⁴ (2)
GSE TRxNet Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15)/42.7 (140)	7.6 (300)	NP	3.5 x 10 ⁻⁴ (1.7) [C][E]	3.5 x 10 ⁻⁴ (1.7) [C][E]
GSE PermaNet Geocomposite	O/C	PP/PE/PP	Y, nonwoven	4.5 (15)/45.7 (150)	7.6 (300)	NP	NP	1.9 x 10 ⁻³ (9.2)[B]
GSE DuraFlow Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5)/45.7 (150)	8.4 (330)	NP	NP	5 x 10 ⁻³ (24)[D][E]
GSE TenFlow Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5)/45.7 (150)	8.9 (350)	NP	NP	6.5 x 10 ⁻³ (31)[A][E]
GSE TenDrain Geocomposite	O/C	PP/PE/PP	Y, nonwoven	3.9 (12.75)/46.3 (152)	7.6 (300)	NP	NP	7 x 10 ⁻³ (33) [F][E]
GSE AirMax Geocomposite (Gas Venting)	O/C	PP/PE/PP	Y, nonwoven	3.8 (12.5)/45.7 (150)	8.4 (330)	NP	NP	3.5 x 10 ⁻⁴ (1.7) [C][E]
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	9 x 10 ⁻⁴ (4.3)	9 x 10 ⁻⁴ (4.3)[B]

Note: GSE Geonets and Geocomposites are available in other thicknesses.

[A] 1000 lb/ft² Pressure, sand boundary, seating time 100hr

[B] gradient 0.1, seating time 100 hr

[C] Air Transmissivity, 3.0 gradient, 1,000 lb/ft²

[D] gradient=0.02, 15,000 lb/ft² Pressure

[E] sand boundary, and a seating time of 1 hr

[F] gradient=0.02, 1,000 lb/ft² Pressure

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

- [A] sand boundary, seating time 100hr
- [B] gradient 0.1, seating time 100 hr
- [C] Air Transmissivity, 3.0 gradient, 1,000 lb/ft²
- [D] gradient=0.02, 15,000 lb/ft² Pressure
- [E] sand boundary, and a seating time of 1 hr
- [F] gradient=0.02, 1,000 lb/ft² Pressure

- NP = Data not provided by manufacturer
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◆ Specification Change— this specification (D1621) changed in the 2017 Specifier's Guide.
From: Compressive Strength at yield ASTM D1621 kPa (psi)
To: Compressive Strength at yield per ASTM D6364 units kPa (psi)

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 ASTM D6364 kPa (psi)/% deflection at yield*	Transmissivity ASTM D4716-87 [5]	
							Gradient = 0.1 Pressure = 10kPa 209 lb/ft ²	Gradient = 1.0 Pressure = 479kPa 10,000 lb/ft ²
							m ² /s (gal/min/ft)	m ² /s (gal/min/ft)
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 ⁻³ (2.41)	1.2 x 10 ⁻³
TN 220 D/L 6,8	O/C	PP/PE/PP	Y (NW)	4.3/varies (14/varies)	NP	NP	3.0 x 10 ⁻⁴ m ² /sec	1 x 10 ⁻⁴ (0.05)
TN 270 D/L 6,8	O/C	PP/PE/PP	Y (NW)	4.3/varies (14/varies)	NP	NP	1 x 10 ⁻³ (0.48)	5 x 10 ⁻⁴ (0.24)
TN 330 D/L 6,8	O/C	PP/PE/PP	Y (NW)	4.3/varies (14/varies)	NP	NP	2.5 x 10 ⁻³ (1.2)	1 x 10 ⁻³
TechFab India www.techfabindia.com								
TDC55130	Extruded	PE	Y	3.90 (12.8)	5.0 (197)	NP	0.00244 (12.0)	0.00025 (12.0)
Tensar International Corp. www.tensarcorp.com								
Roadrain T5	O/C	HDPE	6 oz/yd ² , nonwoven	3.8/61 (12.75/200)	7.10 (280)	NP	NA	1.5 x 10 ⁻³ [A]
Roadrain T7	O/C	HDPE	8 oz/yd ² , nonwoven	3.8/61 (12.75/200)	7.6 (300)	NP	NA	1.5 x 10 ⁻³ [B]

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

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- [1] O/C = Other or combination
- [2] HDPE = High Density polyethylene
- [2] PP = Polypropylene
- [2] 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.
- NP = Data not provided by manufacturer
- NA = Not applicable, per manufacturer
- PE = Polyethylene
- PS = Polystyrene
- O/C = Other or combination

Product Name	Core Structure [1]	Core Polymer [2]	Geotextile Filter		Dimensional Properties		Composite Wide Wrth 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 ³ /s	300 kPa m ³ /s
Low & Bonar Inc. www.lowandbonar.com									
Colbondrain CX1000	channel	PP	PP	NWNP	0.1/280	4	25	NP	NP
TechFab India www.techfabindia.com									
TD-3520U	Corrugated	PP	PP	-	0.1 (0.32)	4.0 (157)	2	-	120 x 10 ⁶

[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-benonite 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 D6364 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 ² /sec-m (gal/min/ft)	m ² /sec-m (gal/min/ft)
Drainage Products Inc. www.drainaway.com								
Drain Away Panel	DCC	HIPS	NW	0.6–1.5/3–6 (2–5/10–20)	15.8 (620)	239 (35)	0.001 (5)	0.002 (10)
Low & Bonar Inc. www.lowandbonar.com								
Enkadrain 3811	EM	PP	NW	1/30.5 (3.25/100) & 2/15.25 (6.5/50)	11.4 (449)	NA	NP	15.9

[1] SCC = Single cuspated core
 DCC = Double cuspated 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