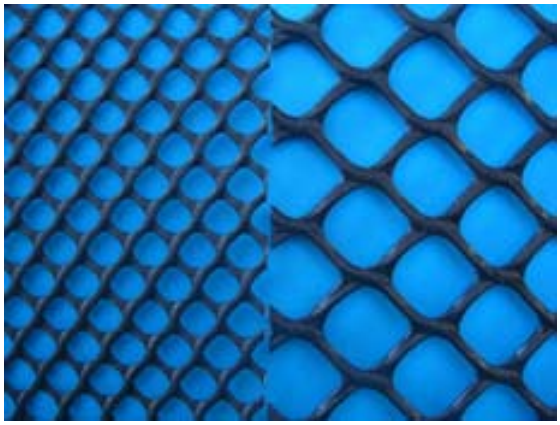
Bi-planar and Tri-planar Drainage Geonets



Yuan Da's **Bi-planar Drainage Geonets** consist of two layers of heat bonded polypropylene or polyester non-woven geotextile bonded to a high strength HDPE Geonet core. They are designed for in-plane flows over a large surface area. The **Geonet core** is UV stabilised with 2% Carbon Black and is chemically and biologically resistant. Available in 2m and 4m wide rolls with a 10cm fabric overlap, each batch is tested and quality certified.

Bi-planar Drainage Geonets provide drainage, filtration, separation and protection in the one product. The geotextile cover provides rapid drainage and prevents soil particles blocking the drainage core. When using **Drainage Geonets** the most critical engineering property is the in-plane flow capacity under design loads and site specific boundary conditions. **Bi-planar Drainage Geonets** can be used for landfill cappings, new landfills, water reservoirs; horizontal drainage in embankments, roads and railways; behind retaining walls, foundations, basements; cut and cover tunnels; gardens and sports fields.

Applications: The light weight and flexible **Geonets** are easy to handle and install and offer long term durability. Available in a range of sizes, Yuan Da's **Bi-planar Drainage Geonets** can be used:

- For projects where the foundation reasonable or the bearing capability demand is low, such as parks, temporary roads, banks and slopes;
- In place of soil drains in civil and environmental applications such as under-slab drainage, gas venting and leachate collection;
- As a surface water removal layer in landfill final covers;
- As a leak detection layer between two barrier layers;
- To replace traditional aggregate drains especially on very steep slopes or vertical walls.
- For above ground gardens and water harvesting under sports fields.

Typical Values – HDPE Biplanar Geonet

Properties	CE111	CE121	CE131	CE131B	CE151
Width (m)	2 or 4				
Length (m)	50-100				
Aperture (mm)	8-6	8-6	27-27	22-22	74-74
Tensile Strength >= (kN/m)	2.0	7.68	5.8	6.4	1.82
Elongation at maximum strain <= (%)	41.0	20.2	16.5	18.6	23.2
Tensile strength at 10% strain >= (kN/m)	1.32	6.80	5.20	5.74	3.83

Typical Values – Biplanar Drainage Geonet with Geofabric

Item	CE121	Standard
Core Material	HDPE	o
Aperture size (mm) diagonal	8 x 6 ± 2	o
Yield strength ≥KN/M	7.68	o
Yield elongation ≤%	20.2	o
Tensile Strength at 10% elongation ≥kN/m	6.8	ASTM D4595
Elongation at 50% strength ≤%	3.2	ASTM D4595
Carbon Black %	2	o
Geofabric (according to requirements)		
Material Needle punched non woven	Polypropylene/Polyester	o
Mass (g/m2)	140-600	ASTM D5261
Geocomposite (140g/m2 on both sides)		
Mass per unit area (g/m2)		ASTM D5261
Thickness at 20kPa / 200kPa		ISO9863
Peak Tensile Strength MD / CD (kN/m)		ASTM D4632
Elongation at Peak, MD / CD (%)		ASTM D4595o
CBR (kN)		AS3706.4
Flow Capacity in plane, MD (l/m.s)		ISO12958o

Triplanar Drainage Geonets

Yuan Da's **Tri-planar Drainage Geonet** consists of two outer layers of inclined ribs separated by strong vertical ribs. The whole structure is bonded to a non woven geotextile. The high compressive strength resists crushing and the geotextile delivers a high flow rate under load while preventing soil particles blocking the drainage core. The top and bottom auxiliary ribs reduce the amount the geotextile intrudes into the core compared to bi-planar composites. **Triplanar geonets** are also available without a geotextile.

Typical values - Triplanar Drainage Geonet without geotextile cover

Physical property		Test Method	Units	Product Code		Note
				YDT1	YDT2	
Composition		/	/	3 ribs	3 ribs	/
Material of polymer		/	/	HDPE	HDPE	/
UV Stabiliser		/	/	Carbon black	Carbon black	/
Geometric property						
Thickness	V=20kPa	ISO9863	mm	7.0	7.6	a
	V=200kPa	ISO9863	mm	6.5	7.0	a
Unit weight		ISO9864	g/m2	>=1250	>=1550	a
Roll width		/	m	4.00	4.00	a
Roll length		/	m	25.0	25.0	a
Roll diameter		/	m	0.50	0.53	a
Technical characteristic						
Transmissivity water	v=20kPa	ISO12958	l/m/s	2.60	3.00	a,b,c,d,e
	v=100kPa	ISO12958	l/m/s	2.40	2.80	a,b,c,d,e
	V=200kPa	ISO12958	l/ms	2.20	2.60	a,b,c,d,e
	V=500kPa	ISO12958	l/m/s	1.80	2.20	a,b,c,d,e
	V=1000kPa	ISO12958	l/m/s	1.30	1.50	a,b,c,d,e
Tensile Strength (KN/M)		ISO10319	KN/m	12	14	a,b,e
Elongation (%)		ISO10319	KN/m	20	20	a,b,e

Notes:

a= representative value; b= longitudinal; c= 2mm HDPE condition of pad border; d= l/m/s= 1.0E-3 m2/s

e= transmissivity and tensile strength of composite Drainage Net tested every 25000m2