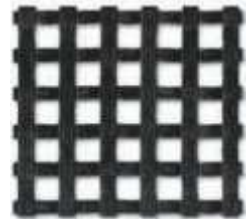


GEOSYNTHETIC



CONTENT

Geogrid Series 3

- PP Biaxial Geogrid
- HDPE Uniaxial Geogrid
- Fiberglass Geogrid
- Polyester Geogrid

HDPE Geocell 7

Geonet 8

Geotextile 9

- Short Fiber Needle Punched Non Woven Geotextile
- Filament Spunbond Needle Punched Geotextile

Geomat 10

Tri Dimensional Composite Drainage Geonet 11

Geomembrane Series 12

- HDPE Geomembrane
- LDPE Geomembrane
- LLDPE Geomembrane
- PE/ EVA/ ECB Geomembrane
- PVC Geomembrane

PP Biaxial Geogrid

Introduction:

CLBI Biaxial geogrid is manufactured from polypropylene. It is produced through the process of extruding, punching, heating, longitudinal stretching and transverse stretching.

Performance:

Homogeneous structure, low creep, anti-aging and resisting acid & alkaline.

Applications:

Make reinforce treatment for various kinds of soft soil foundation to evenly distribute load stress and reduce uneven settlement, not easy to generate static electricity, and flammability property good in the coal mine. It is easy to wash coal. Used in highway, railway, port, airport and municipal project. Support in the recovery working face of coal mine and roadway in the coal mine.

Specifications

Index Properties	Test Method	Unit	GG1515	GG2020	GG3030	GG4040
			MD TD	MD TD	MD TD	MD TD
Polymer	--	--	PP	PP	PP	PP
Minimum Carbon Black	ASTM D 4218	%	2	2	2	2
Tensile Strength@ 2% Strain	ASTM D 6637	Kn/m	5 5	7 7	10.5 10.5	14 14
Tensile Strength@ 5% Strain	ASTM D 6637	Kn/m	7 7	14 14	21 21	28 28
Ultimate Tensile Strength	ASTM D 6637	Kn/m	15 15	20 20	30 30	40 40
Strain @ Ultimate Strength	ASTM D 6637	%	13 10	13 10	13 10	13 10
Structural Integrity						
Junction Efficiency	GRI GG2	%	93	93	93	93
Flexural Rigidity	ASTM D 1388	Mg-cm	700000	1000000	3500000	10000000
Aperture Stability	COE Method	mm-N/deg	646	707	1432	2104
Dimensions						
Roll Width	--	M	3.95	3.95	3.95	3.95
Roll Length	--	M	50	50	50	50
Roll Weight	--	Kg	39	50	72	105
MD denotes Machine direction. TD denotes transverse direction.						



HDPE Uniaxial Geogrid

Introduction:

Clibi Uniaxial Geogrid are manufactured by a process of extruding, punching, heating and longitudinal stretching. It is made of high density polyethylene and they are chemically inert, unaffected by the U.V. rays and fully resistant to aging in the soil environment.

Performance:

High strength, good flexibility, anti-aging, resisting acid and alkaline.

Applications:

Make reinforcement for various kinds of soft soil foundation enhance and improve bearing ability of the roadbed, make reinforcement for retaining wall, steep slope, dam and bridge abutment under stress status for long term thus to improve quality and prolong service life of the project.

Specification.

Index Properties	Test Method	Unit	GG60PE	GG80PE	GG120PE	GG160PE
			MD	MD	MD	MD
Polymer	--	--	HDPE	HDPE	HDPE	HDPE
Minimum Carbon Black	ASTM D 4218	%	2	2	2	2
Tensile Strength@ 2% Strain	ASTM D 6637	Kn/m	16	23	35	47
Tensile Strength@ 5% Strain	ASTM D 6637	Kn/m	31	44	65	85
Ultimate Tensile Strength	ASTM D 6637	Kn/m	60	80	120	160
Strain @ Ultimate Strength	ASTM D 6637	%	10	10	10	10
Flexural Rigidity	ASTM D 1388	Mg-cm	1400000	2300000	7700000	19000000
Durability						
UV Resistance	ASTM D 4355	%	98	98	98	98
Flexural Rigidity	EN ISO 13438	%	100	100	100	100
Oxidation Resistance	Wash DOT T926	--	PASS	PASS	PASS	PASS
Dimensions						
Roll Width	--	M	1	1	1	1
Roll Length	--	M	75	50	30	30
Roll Weight	--	Kg	34	30	26	33
MD denotes Machine direction.						



Fiberglass Geogrid

Introduction:

Clibi fiberglass geogrid is based on fiberglass woven cloth coated with modified bitumen or PVC, it was developed to address the problem of pavement cracking on highways, roads and runways, driven by a need to reduce cost for infrastructure maintenance and repair.

It is characterized by high tensile strength in axial and lateral directions, low stretch rate, alkali-resistance, low temperature-resistance, as well as convenience in construction and low price. It can be used on pitch pavement to prevent cracks and prolong pavement service life. It also can be used as a basal reinforcement material for hillsides, reservoirs, harbors, ports, water channels, seawalls, etc.

Performance:

High strength, high modulus and low temperatures resistance.

Applications:

Reinforcement for road pavement
Reinforcement for railway basement
Reinforcement for Tunnel
Reinforcement for Slope
Reinforcement for embankment.

Specifications:

Tensile Strength(KN)	Warp	>30	>50	>60	>80	>100	>120	>150	>200
	Weft	>30	>50	>60	>80	>100	>120	>150	>120
Elongation(%)		<4	<4	<4	<4	<4	<4	<4	<4
Mesh Size(mm)		25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4
Elastic Modulus		76	76	76	76	76	76	76	76
Width(m)		1~6	1~6	1~6	1~6	1~6	1~6	1~6	1~6
Length(m)		50~300	50~300	50~300	50~300	50~300	50~300	50~300	50~300
Temperature Resistant(°C)		-100~280	-100~280	-100~280	-100~280	-100~280	-100~280	-100~280	-100~280
Resin Content (%)		18~20	18~20	18~20	18~20	18~20	18~20	18~20	18~20
Glue Type		Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage	Bitumen PVC SBR soakage



Polyester Geogrid

Introduction:

Clibi Polyester Geogrid are composed of polyester yarn coated with bitumen, PVC, SBR. The polyester geogrid are high tensile strength in both the warp and weft directions.

Performance:

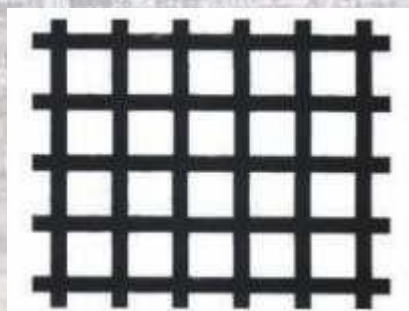
High tensile strength, Low elongation, Excellent temperature resistant, Good anti-aging and good Alkali-resistance.

Applications:

The polyester geogrid is used for reinforce the roadbeds in soft soil, railway and dam etc. It has good performance on preventing the cracks.

Specifications:

Tensile Strength(KN)	Warp	>30	>50	>60	>80	>100	>120	>150	>200
	Weft	>30	>50	>60	>80	>100	>120	>150	>120
Elongation(%)		<13	<13	<13	<13	<13	<13	<13	<13
Mesh Size(mm)		25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4	25.4*25.4
Width(m)		1~6	1~6	1~6	1~6	1~6	1~6	1~6	1~6
Length(m)		50~300	50~300	50~300	50~300	50~300	50~300	50~300	50~300
Temperature Resistant(°C)		-100~280	-100~280	-100~280	-100~280	-100~280	-100~280	-100~280	-100~280
Resin Content (%)		30	30	30	30	30	30	30	30
Glue Type		PVC SBR soakage	PVC SBR soakage	PVC SBR soakage	PVC SBR soakage	PVC SBR soakage	PVC SBR soakage	PVC SBR soakage	PVC SBR soakage



HDPE Geocell

Introduction:

Clibi Geocell is manufactured by quality HDPE material, has good performance on Anti-aging, resisting acid & alkaline, homogenous structure, best sidewise restriction and soil-fixation, convenient and fast construction.

Applications:

Make reinforcement treatment for soft soil foundation and protection of steep slope, used in highway, railway, airport, wharf, especially in air slaked mountain, desert and swamp land etc.

Specifications:

Model	Height (mm)	Welding Distance (mm)	Thickness (mm)	Tensile Strength of Welding point (N/cm)	Tensile Strength of the geocell (N/cm)	Tensile Strength at Yield of sheet (N/mpa)
50-400	50	330~1000	1.1/1.2/1.5	100	120	20
75-400	75	330~1000	1.1/1.2/1.5	100	120	20
100-400	100	330~1000	1.1/1.2/1.5	100	120	20
150-400	150	330~1000	1.1/1.2/1.5	100	120	20
200-400	200	330~1000	1.1/1.2/1.5	100	120	20
Note: Customer could choose the suitable width, height, thickness etc. when the order confirmed.						



Geonet

Introduction:

Clibi Geonet is a homogenous and stable structure, Anti-aging, resisting acid and alkaline ect.

Application:

Make reinforcement treatment for normal soft foundation and sand-fixation gabion, used in drain cushion, side slop, grass planting for slop protection, coastal operation etc.

Chief specifications include CE121,CE131,CE151,CE181,DN1 and HF10.

Specification:

Table 1: Unit weight, mesh size and specifications of deviation.

Property	CE121	CE131	CE151	CE181	DN1	HF10
Unit Weight (g/m2)	730±35	630±30	550±25	700±30	750±35	1240±60
Mesh Size(mm)	(8±1)§(6±1)	(27±2)§(27±2)	(74±5)§(74±5)	(90±5)§(85±5)	(10±1)§(10±1)	(10±1)§(6±1)
Width Variation(m)	+0.06 0					
Length Variation(m)	+1 0					

Table 2: Tensile Strength at Yield

Item	CE121	CE131	CE151	CE181	DN1	HF10
Tensile Strength at Yield(KN/M)	Vertical and horizontal≥6.2	Vertical and horizontal≥5.8	≥5.0	≥6.0	Vertical and horizontal≥6.0	Vertical and horizontal≥18



Introduction:

Application:

Specification:

No.	Item	Specification											Note
		100	150	200	250	300	350	400	450	500	600	800	
1	Weight Variation%	-8	-8	-8	-8	-7	-7	-7	-7	-6	-6	-6	MD and TD
2	Thickness mm ≥	0.9	1.3	1.7	2.1	2.4	2.7	3.0	3.3	3.6	4.1	5.0	
3	Width Variation %	-0.5											
4	KN/m ≥	2.5	4.5	6.5	8.0	9.5	11.0	12.5	14.0	16.0	19.0	25.0	MD and TD
5	Elongation at Break %	25~100											
6	CBR Mullen Burst Strength KN ≥	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.2	4.0	
7	Sieve Size O ₉₀ mm	0.07~0.2											
8	Vertical Permeability Coefficient cm/s	K × (10 ⁻¹ ~ 10 ⁻³)											K=1.0~9.9
9	Tear Strength KN ≥	0.08	0.12	0.16	0.20	0.24	0.28	0.33	0.38	0.42	0.46	0.6	MD and TD

Item		Value								
1	Breaking strength KN/M	4.5	7.5	10	15	20	25	30	40	50
2	Elongation at break	40~80								
3	CBR Mullen Burst Strength KN≥	0.8	1.6	1.9	2.9	3.9	5.3	6.4	7.9	8.5
4	Tear strength/KN	0.14	0.21	0.28	0.42	0.56	0.70	0.82	1.10	1.25
5	Sieve Size O ₉₀ mm	0.05~0.20								
6	Vertical Permeability Coefficient cm/s	K × (10 ⁻¹ ~ 10 ⁻⁵), k=1.0 ~9.9								
7	Thickness/mm	0.8	1.2	1.6	2.2	2.8	3.4	4.2	5.5	6.8
8	Width Variation %	-0.5								
9	Weight Variation %	-5								

Geomat

Introduction:

Clibi Geomat has good structure of tri dimension cavum, it can fix the grass in soil very well. It also has good advantage of light weight, easy for construction.

Application:

Protect vegetation and prevent loss of water and erosion of soil, used in slope protection and grassing in highway, railway, airport, rivers, greening in gardens and soil-fixation in deserts etc.

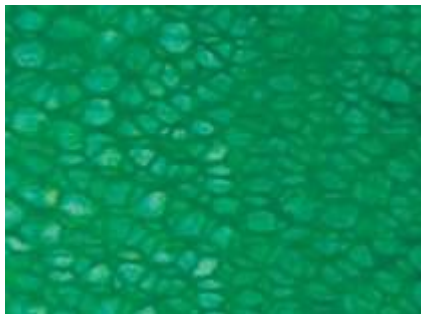
Specification:

Table 1 unit weight, size and variation

Item	EM2	EM3	EM4	EM5
Unit weight g/m ²	≥220	≥260	≥350	≥430
Thickness/mm	≥10	≥12	≥14	≥16
Width variation/m	+0.1 0			
Length variation/m	+0.1 0			

Table 2 Tensile strength

Item	EM2	EM3	EM4	EM5
Longitudinal tensile strength (KN/m)	≥0.80	≥1.4	≥2.0	≥3.2
Horizontal tensile strength (KN/m)	≥0.80	≥1.4	≥2.0	≥3.2

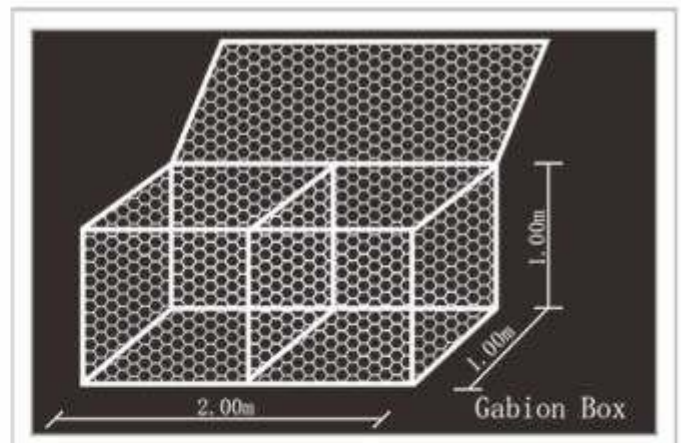


Gabion Box

Length	Width	Height	Diaphragm	Volume	Tolerance
2.0m	1.0m	0.3m	1	0.6m ³	
3.0m	1.0m	0.3m	2	0.9m ³	
4.0m	1.0m	0.3m	3	0.2m ³	
2.0m	1.0m	0.5m	1	1.0m ³	L +/- 3%
3.0m	1.0m	0.5m	2	1.5m ³	W +/- 5%
4.0m	1.0m	0.5m	3	2.0m ³	H +/- 5%
1.0m	1.0m	0.5m	0	1.0m ³	
1.5m	1.0m	1.0m	0	1.5m ³	
2.0m	1.0m	1.0m	1	2.0m ³	
3.0m	1.0m	1.0m	2	3.0m ³	
4.0m	1.0m	1.0m	3	4.0m ³	



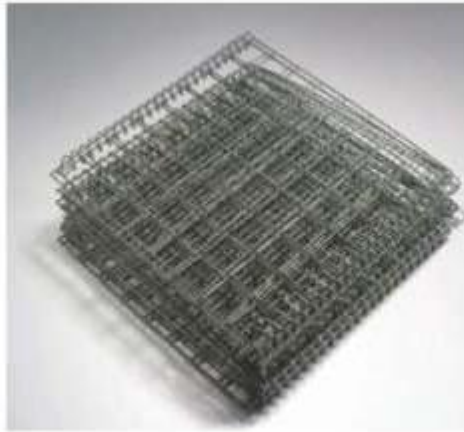
Opening (mm)	Wire Diameter (Wire) (mm)	Wire Diameter (PVC Coate)/ Inner/Outside (mm)	Strands
60X80	φ2.0-2.8	φ2.0/3.0-2.5/3.5	3
80X100	φ2.0-3.2	φ2.0/3.0-2.8/3.8	3
80X120	φ2.0-3.2	φ2.0/3.0-2.8/3.8	3
100X120	φ2.0-3.4	φ2.0/3.0-2.8/3.8	3
100X150	φ2.0-3.4	φ2.0/3.0-2.8/3.8	3
120X150	φ2.0-4.0	φ2.0/3.0-3.0/4.0	3



Gabion Box



Gabion Mesh





Tri Dimensional Composite Drainage Geonet

Introduction:

CLIBI Tri dimensional composite drainage geonet is made of a unique Tri dimension geonet adhibit geotextile on both sides. It has the property of geotextile(filtration function) and geonet(drainage and protection) and provide a function system'filtration'drainage-protectionff. The core of net with its unique tri-dimension structure can bear higher compressing load in construction and remain the certain thickness, provide good water conductivity.



Application:

Landfill drainage; roadbed and road drainage; railway drainage ,tunnel drainage, underground structure drainage, the retaining back wall drainage, gardens and sports grounds drainage.

Specification:

Specifications and technical parameters of Tri dimensional composite drainage geonet.

Drainage network core	Units	Specifications			
Unit weight	g/m2	750	1000	1300	1600
Thickness OV=20kpa	mm	5.0	6.0	7.0	7.6
Hydraulic conductivity	m/s	K\$10 ⁻⁴	K\$10 ⁻⁴	K\$10 ⁻⁴	K\$10 ⁻⁴
Elongation	%	50	50	50	50
Tensile strength (core network)	KN/m	8	10	12	14
Geotextiles	g/m2	200-200	200-200	200-200	200-200

The contrast of Tri dimensional composite drainage geonet and natural grit drainage layer.

Application	Tri-dimension composite geonet for drainage	Natural Gravel
Conducting and discharging Water and gas	Pass through strict quality control production line and have stable performance and good property of conducting water	The traditional gravel have complex composition and its drainage property change with its attribute. Its actual drainage property is much lower laboratory data for its contains of sand and dust.
Load/Protection	Light, no more extral load on geomembrane and waste. Anti-pull, anti-compress, anti-impact and can prevent geomembrane from damage	Pressure on the waste, the keen stone can puncture and damage geomembrane. Often need other safeguard, such as thicker geotextile.
Function	Four functions: drainage, separation, filtration and protection	Only drainage function, easy be blocked, and need accessorial filtration system.
Construction and installation	Fast installation, easy for construction, without heavy machinery and professionals. Construction speed is 5-10 times of gravel.	Slow installation, bulky and heavy, need heavy machinery. High cost and have more difficulties with slope degree is more than 1V:4H.
Environment	Raw material is polyethylene, nontoxic, no pollution, 100% recyclable products.	Relatively speaking, the gravel is scarce and precious resources. The ecological environment will be destroyed when people mine gravel.
Durability	Good anti-erosion, antioxidation, anti-atmospheric media and rain water. It have long-term and the best drainage property if used them along with the geotextile.	Be easily blocked, has poor durability.

Geomembrane Series

Introduction:

---- **Clibl** Geomembrane including LDPE, LLDPE, HDPE, EVA, ECB and PVC geomembrane.

Application:

---Prevent leakage disposal in waste burying field, waste water, or waste dregs disposing field.

River bank, lake dam, mine remaining, reservoir, tunnel, liquid storage pool(pit, mine)

Preventing leakage of subway, basement, tunnel, holes

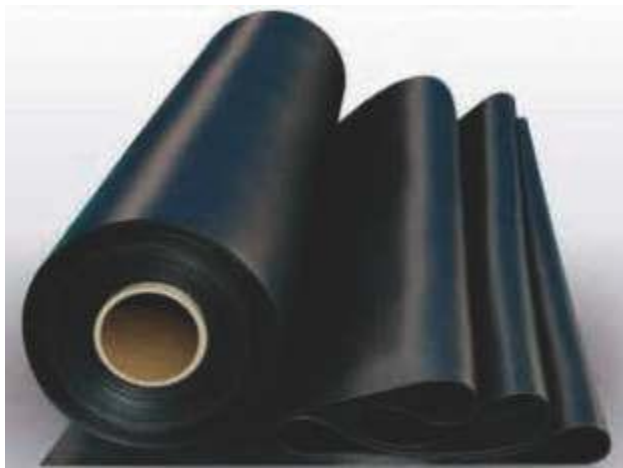
Anti-slot leakage in roadbed and other groundsill

The plan direction laying of dam, the vertical direction laying for groundsill, used in the construction fence and waste material field.

Used in seawater or freshwater feed field.

Used in groundsill of road, highway, railway and waterproof layer of swelling clay and wet collapsed loess.

Preventing leakage on rooftop



HDPE Geomembrane

[illegible]

LDPE Geomembrane

Item	Test Value								
	0.3mm	0.5mm	0.75mm	1.00mm	1.25mm	1.5mm	2.00mm	2.50mm	3.00mm
Density (g/m2)	0.939								
Tensile Strength at Break(N/mm) (MD/CN)	6	9.5	14	19	23	28	37	47	56
Elongation (MD/CD) %	560								
Tear Strength(N)	27	45	63	90	108	135	180	225	270
Puncture Strength(N)	52.5	84	133	175	217	259	350	434	525
Carbon Black Content(%)	2.0~3.0								
Oxidative Induction time(min)	60								
-70℃ Low Temperature Impact brittle property	Pass								
Vapour Permeability coefficient (cm/ cm2. s. pa)	≤1.0 x 10-13								
Dimensional Stability	± 2								

HDPE Geomembrane

Item	Test Value							
	0.5mm	0.75mm	1.00mm	1.25mm	1.5mm	2.00mm	2.50mm	3.00mm
Density (g/m ²)	0.939							
Tensile Strength at Break(min) (MD/CN)	13	20	27	33	40	53	66	80
Elongation (MD/CD) %	800							
Max 2% Modulus(N/mm)	210	370	420	520	630	840	1050	1260
Tear Strength(N)	50	70	100	120	150	200	250	300
Puncture Strength(N)	120	190	250	310	370	500	620	750
Carbon Black Content(%)	2.0~3.0							
Elongation at Multiracial (%)	30							
Oxidative Induction time(min)	Standard OIT: 100 High Pressure OIT: 400							
Oven aging at 85℃	≥35							
UV Resistance	≥35							

PE/ EVA/ ECB Geomembrane

Item	Test Value		
	EVA	ECB	PE
Thickness(mm)	0.2~4		
Width(m)	2.5~8		
Tensile Strength at Break(Mpa)	18	17	18
Elongation at break(%)	650	600	600
Tear Strength(KN/M)	100	95	95
Impermeability(0.3MPa/24h)	No Leakage		
Bending at low temperature(℃)	-35	-35	-35
Stretch tensor at heating(mm)	≤ Elongation	2	2
	≤ Shrink	6	6
Air Oven Aging	Tensile strength at break	16	15
	Elongation at Break	600	550
Anti-alkali(Saturated solution of Ca(OH) ₂ X 168H)	Tensile strength at break	17	16
	Elongation at break	600	550
Nurture weathering at manual Simulation	Tensile strength at break retained %	80	80
	Elongation at break retained %	70	70
Puncture Strength	1.5mm	300	300
	2.0mm	400	400
	2.5mm	500	500
	3.0mm	600	600

PVC Geomembrane

Item	Model I	Model II
Tensile Strength MPa ≥	8.0	12.0
Elongation at Break %	200	250
Size change rate in heat Treatment %	3.0	2.0
Bending Low Temperature ℃	No Crake at -20℃	No Crake at -25℃
Anti-Puncture	No Leakage	
Impermeability	Impermeable	

