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## Engineering a Better Solution

Maccaferri's motto is 'Engineering a Better Solution'; We do not merely supply products, but work in partnership with our clients, offering technical expertise to deliver versatile, cost effective and environmentally sound solutions. We aim to build mutually beneficial relationships with clients through the quality of our service and solutions.

### Disclaimer:

For the optimisation and improvement 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 cannot accept 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.

Technical Data Sheets, Installation Guides and more are available at

[www.maccaferri.com/uk/documents](http://www.maccaferri.com/uk/documents). Registration is required and is free of charge.



## MACCAFERRI PRODUCT GUIDE AN INTRODUCTION

140 years ago we invented the modern gabion and dramatically changed the landscape of civil engineering.

Since these humble beginnings we have diversified significantly.

Today, from 30 factories around the world we supply construction materials that retain, protect, reinforce, separate, filter and drain soils.

We do not simply sell products: we strive to be a leading technical reference in the design and supply of solutions to overcome the geotechnical problems facing our clients.



We manufacture and supply high quality durable materials which:

- M** Enhance the service life of the works
- M** Reduce environmental impact
- M** Provide client reassurance

Many of our products are certified by international or local accreditation bodies.

Our engineers, technicians and account managers are available to answer your questions and provide technical support; it is our expertise that differentiates us.

This guide provides a short introduction to the range of Maccaferri products. It includes only a proportion of the full range we offer, so if something seems to be missing, just call!

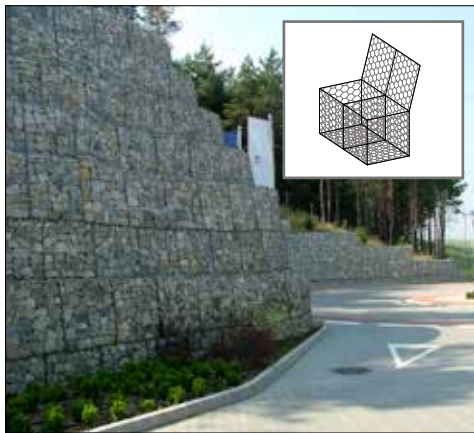
Detailed technical information, brochures, case histories and more are available from our website [maccaferri.com/uk](http://maccaferri.com/uk).

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With 30 factories worldwide, we are the global leader in gabions. 'Double twist' woven mesh gabions are used for engineering applications where you need high strength with flexibility.



#### Uses

- Engineered mass gravity retaining walls
- Erosion protection in rivers
- Culverts, portals and wing walls
- Noise bunds

#### Benefits

- BBA HAPAS Certified up to 120 year life
- CE marked and ETA compliant
- Accords with EN 10244-2, EN 10223-3 and EN 10218
- Flexible - accepts differential settlement
- Free draining
- Can accommodate vegetation
- GalMac® Al/Zn galvanised (Class A to EN 10244-2)
- New optional PoliMac® coated mesh for high abrasion and corrosion resistance

Size (m)	Length (m)	Width (m)	Height (m)	No. of cells	Vol of stone (m³)	Tonnes of stone**
1x1x1	1	1	1	1	1	1.7
1.5x1x1	1.5	1	1	1	1.5	2.6
2x1x1	2	1	1	2	2	3.4
2x1x0.5	2	1	0.5	2	1	1.7
2x0.5x0.5	2	0.5	0.5	2	0.5	0.9
3x1x1	3*	1	1	3	3	5.1
4x1x1	4*	1	1	4	4	6.8

\* = Special order. Other sizes available on request

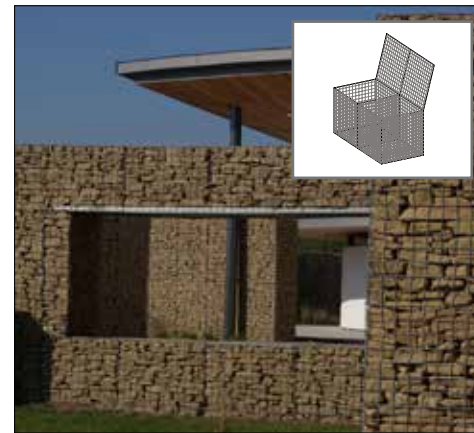
\*\* = Based on 1.7t/m³ density of stone fill

Tolerance exists on properties

Mesh Type	Length (m)
8x10 - GalMac® coated	2.7mm
8x10 - GalMac® + Polymer coated	3.7mm o/a
Lacing wire (GalMac®/GalMac® + Polymer)	2.2mm/3.2mm



Welded gabions are becoming increasingly fashionable in architecture and landscaping applications. They are available in a variety of wire diameters to suit the required aesthetics.



#### Uses

- Architectural cladding to walls and buildings
- Landscaping works
- Low-height retaining walls
- Not recommended for rivers / watercourses
- Free standing walls

#### Benefits

- CE marked and ETA compliant
- Accords with EN 10244-2, EN 10223-8 and EN 10218
- GalMac® Al/Zn galvanised (Class A to EN 10244-2)
- Free draining
- Can accommodate vegetation

Size (m)	Length (m)	Width (m)	Height (m)	No. of cells	Vol. of stone (m³)	Tonnes of stone**
1x1x1	0.975	0.975	0.975	1	0.93	1.6
1.5x1x1	1.5	0.975	0.975	1	1.43	2.4
2x1x1	1.95	0.975	0.975	2	1.85	3.2
2x1x0.5	1.95	0.975	0.45	2	0.86	1.5

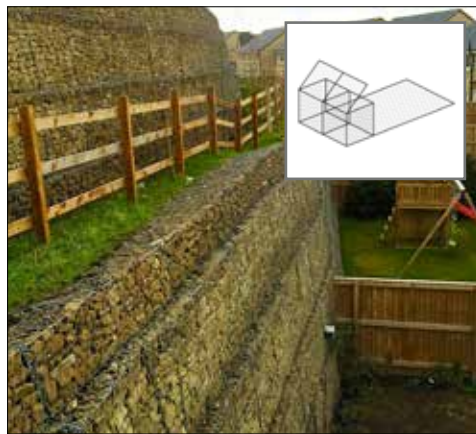
Other sizes available on request, including 4mm face/3mm body units

\*\* = Based on 1.7t/m³ density of stone fill

Tolerance exists on properties

Mesh Type	Wire diameter
75mmx75mm GalMac® coated	3mm/4mm/5mm
Lacing wire (GalMac®)	2.2mm

A modular gabion-faced soil reinforcement system. Assembled with a gabion fascia unit and an integral factory-fitted soil reinforcement geogrid. It has been used on the tallest reinforced soil structures in the world.



#### Uses

- Soil reinforcement slopes and walls with gabion wall appearance
- Highway/railway retention
- Acoustic, safety and rockfall protection bunds
- River walls

#### Benefits

- BBA HAPAS Certified - up to 120 year life
- Flexible - accepts differential settlement
- GalMac® Al/Zn and polymer coated
- Easy to construct and often used in conjunction with our geogrids
- Face angle up to vertical (depending on design)
- Pre-fitted components reduce installation time and cost compared to other systems

Size (m)	Tail length (inc. face)	Width (m)	Height (m)	No. of cells	Vol of stone (m³)	Tonnes of stone**
4x2x1	4*	2	1	2	2	3.4
4x2x0.5	4*	2	0.5	2	1	1.7
4x2x0.8	4*	2	0.8	2	1.28	2.2

\* = Other tail lengths available to special order

\*\* = Based on 1.7t/m³ density of stone fill

Tolerance exists on properties

Mesh Type	Wire diameter
8x10 - GalMac® + Polymer coated	3.7mm o/a
Lacing wire (GalMac® + Polymer)	3.2mm o/a



A soil reinforcement system with a 'green' revegetating face. The units feature a factory-fitted "lost-shutter" system, which supports the face at the designated angle without the need for any external formwork.



#### Uses

- Soil reinforcement slopes with a 70° vegetated 'green' face
- Highway/railway retention
- Acoustic, safety and rockfall protection bunds

#### Benefits

- BBA HAPAS Certified - up to 120 year life
- Flexible - accepts differential settlement
- GalMac® Al/Zn and polymer coated
- Easy to construct and used in conjunction with our geogrids
- Pre-fitted components (shutter system, geomats, support brackets) reduce installation time and cost compared to other systems

Size (m)	Tail length (inc. face)	Width (m)	Height (m)	Face angle (Deg°)
3x3x0.76 70°	3*	3*	0.76	70°

\* = Other tail lengths, face angles and face widths are available to order

Tolerance exists on properties

Mesh Type	Wire diameter
8x10 - GalMac® + Polymer coated	3.2mm o/a
Lacing wire (GalMac® + Polymer)	3.2mm o/a



Road Mesh reinforces asphalt roads and overlays and extends the fatigue life. Installed within the upper-bound layers of the asphalt, it structurally reinforces the pavement, reducing rutting, shoving and reflective cracking.



#### Uses

- Reduces rutting, pot-holes and shoving in asphalt roads and runways
- Structural reinforcement of asphalt layers
- Limits reflective cracking in overlays
- New-build and resurfacing works
- Reinforces surfacing in high load zones; junctions, crawler lanes etc.

#### Benefits

- Steel wire mesh with transverse bars provides tensile strength at low strain
- Excellent aggregate interlock to optimise load transfer and shear resistance
- Increases fatigue life of the whole pavement, not just the surfacing
- GalMac® Al/Zn galvanised (Class A to EN 10244-2)

Product	Roll length (m)	Roll width (m)
Type LB2G Omega	25 or 50	2,3 or 4
Type LBG Omega	25 or 50	2,3 or 4

Tolerance exists on properties

Product	Mesh type	Mesh wire dia (mm)	Transverse rod dia (mm)	UTS (kN/m) Long./Transv.
Type LB2G Omega	8x10	2.2	3.9	32/32
Type LBG Omega	8x10	2.4	4.9	40/50



Reno Mattresses are used in rivers, streams and channels to stop erosion caused by water flows. The mattresses are filled with rocks to form flexible erosion protection and can also be pre-filled and lifted into the works.



#### Uses

- Preventing river bank erosion
- Anti-scour around bridge piers/abutments
- Estuary works
- Culvert and dam protection
- Flood protection works

#### Benefits

- BBA Certified and CE marked
- Flexible - accepts differential settlement
- GalMac® Al/Zn and polymer coated
- New optional PoliMac® coated mesh for high abrasion and corrosion resistance
- Cost savings vs rip-rap
- Does not rely on vegetation for long-term performance unlike geomats
- Can accommodate vegetation

Size (m)	Mesh type	Length (m)	Width (m)	Height (m)	No. of cells	Vol of stone (m³)	Tonnes of stone**
3x2x0.17	6x8	3	2	0.17	3	1.02	1.73
6x2x0.17	6x8	6	2	0.17	6	2.04	3.47
3x2x0.23	6x8	3	2	0.23	3	1.38	2.35
6x2x0.23	6x8	6	2	0.23	6	2.76	4.7
3x2x0.3	6x8	3	2	0.3	3	1.8	3.06
6x2x0.3	6x8	6	2	0.3	6	3.6	6.12
3x2x0.5	8x10	3	2	0.5	3	3	5.1
6x2x0.5	8x10	6	2	0.5	6	6	10.2

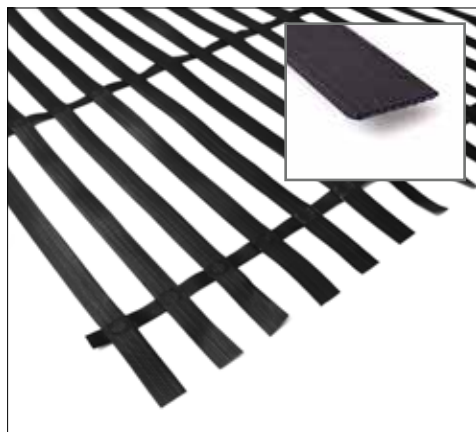
\*\* = Based on 1.7t/m³ density of stone fill

Tolerance exists on properties

Mesh Type	Wire diameter
6x8 - GalMac® + Polymer coated	3.2mm o/a
8x10 - GalMac® + Polymer coated	3.7mm o/a
Lacing wire (GalMac® + Polymer)	3.2mm o/a



Made in Yorkshire, England, ParaGrid® is a versatile, high quality geogrid for soil reinforcement and stabilisation works. It consists of high tenacity polyester fibres, protected within a tough polyethylene coating.



#### Uses

- Engineered retaining walls
- Reinforced soil slopes
- Wrapped face structures, or can be used in conjunction with our Terramesh® and Green Terramesh® soil reinforcement systems

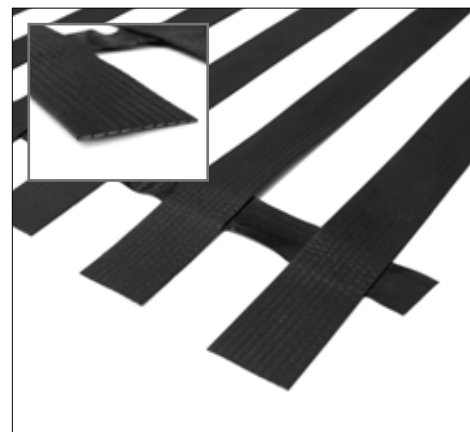
#### Benefits

- BBA HAPAS Certified (Up to 120 year life)
- ETA approved and CE marked
- Superior long-term design strength (LTDS) vs other geogrids
- Made in Britain; lower freight carbon footprint

Product*	50/05	80/05	100/05	120/05	150/05	200/05
UTS - Longitudinal (kN/m)	57	86	106	130	160	212
UTS - Transverse (kN/m)	6	6	6	6	6	6
Nominal strain @Tch	9%	9%	9%	9%	9%	9%
Roll length (m)	100	80	80	50	50	50
Roll width (m)	3.9	3.9	3.9	3.9	3.9	3.9
Roll diameter (m)	0.41	0.45	0.45	0.34	0.36	0.40
Roll weight (kg)	105	108	140	116	131	147

\* = Intermediate strengths available to special order  
Tolerance exists on properties

Yorkshire made ParaLink® is a unique high performance geogrid for embankment stabilisation and ground improvement. It consists of high tenacity polyester fibres, protected within a tough polyethylene coating.



#### Uses

- Embankment basal reinforcement
- Piled embankments (reduces pile requirements)
- Void spanning; old mine workings or natural voids
- Tall 'mega-structure' soil reinforcement in conjunction with Terramesh®/Green Terramesh®

#### Benefits

- BBA Certified (up to 120 year life)
- ETA approved and CE marked
- Superior long-term design strength (LTDS) vs other geogrids and geotextiles
- Made in Britain; lower freight carbon footprint

Product*	400	600	800	1000	1200	1600
UTS - Longitudinal (kN/m)	412	612	826	1038	1236	1648
Nominal strain @Tch	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%
Roll length (m)	150	100	50	50	50	50
Roll width (m)	4.5	4.5	4.5	4.5	4.5	4.5
Roll diameter (kg)	0.75	0.7	0.5	0.5	0.5	0.55
Roll weight (kg)	750	750	550	660	790	980

\* = Intermediate strengths available to special order  
Tolerance exists on properties



MacGrid® EG geogrids are used for soil stabilisation within highway, railway and access track construction. Made from punched and extruded polypropylene, MacGrid® EG is used in the granular construction layers.



#### Uses

- Road base (subgrade) stabilisation
- Access over soft/wet ground
- Rail track bed stabilisation
- Haul roads within mines, wind farms, agriculture, forestry and military sites

#### Benefits

- Reduces the thickness of granular materials needed for the same fatigue life
- Lower carbon footprint as less quarried materials are imported
- Reduced differential settlement and rutting vs un-stabilised roads
- Reduced rutting and maintenance of tracks
- Increased fatigue life of tracks

Product	20 S	30 S	40 S
MATS - Longitudinal (kN/m)	20	30	40
Typical strain @ MATS - Longitudinal (%)	13%	13%	13%
Tensile strength @ 5% strain - Longit. (kN/m)	14	21	28
MATS - Transverse (kN/m)	20	30	40
Typical strain @ MATS - Transverse (%)	10%	10%	10%
Tensile strength @ 5% strain - Transverse (kN/m)	14	21	28
Mesh aperture (mm)*	38x38mm		
Roll length (m)	50m		
Roll width (m)	3.95m		
Roll weight (kg)	48	68	95

MATS: Minimum Average Tensile Strength

\* Larger apertures (e.g. for railway ballast stabilisation) available to special order

Tolerance exists on properties

MacGrid® WG geogrids are used in soil reinforcement applications. Engineered from high-tenacity polyester multifilament yarns, woven together in a grid configuration and with a robust polymeric coating.



#### Uses

- Demanding subgrade stabilisation for haul roads within mines, wind farms, agriculture, forestry and military sites
- Working platform construction

#### Benefits

- Good long-term design strength
- Reduces the thickness of granular materials needed for the same fatigue life
- Lower carbon footprint as less quarried materials are imported
- Reduced differential settlement and rutting vs un-stabilised road
- Reduced rutting and maintenance of tracks
- Increased fatigue life of infrastructure

Product*	4S	5S	6S	8S	11S
UTS - Longitudinal (kN/m)	45	60	75	90	130
Strain @ UTS - Longitudinal	10%	10%	10%	10%	10%
UTS - Transverse (kN/m)	45	60	75	90	130
Strain @ UTS - Transverse	12%	12%	12%	12%	12%
Roll length (m)	100m	100m	100m	100m	100m
Roll width (m)	3.6-5.3	3.6-5.3	3.6-5.3	3.6-5.3	3.6-5.3
Roll weight (kg)	105	169	174	179	190

\* Intermediate strengths available to special order

Tolerance exists on properties

MacGrid® AR is used to reinforce asphalt and is made from glass fibre strands arranged in a grid formation with a polymeric coating. It increases the fatigue life of the pavement and reduces maintenance.



#### Uses

- Reinforce the upper bound layers of asphalt roads, runways and parking areas
- Limits reflective cracking in overlays
- Reduces rutting
- Suitable for new-build and resurfacing works

#### Benefits

- Good interlock with asphalt layers
- Increases fatigue life of pavement
- Reduces maintenance commitments
- Provides an impermeable layer when specified with a bitumen impregnated geotextile

Product	5.7 <sup>*a,b</sup>	10.7 <sup>*a,b</sup>	12.7 <sup>*a,b</sup>	20.7 <sup>*a</sup>
Minimal tensile strength - Longitudinal (kN/m)	50	100	120	200
Typical strain @ max. load - Longitudinal	2.5% ±1	2.5% ±1	2.5% ±1	2.5% (-1;+1.5)
Minimum tensile strength - Transverse (kN/m)	50	100	120	200
Typical strain @ max. load - Transverse	2.5% ±1	2.5% ±1	2.5% ±1	2.5% (-1;+1.5)
Mass/unit area (g/m²)	275 - 300	530 - 560	580 - 625	750 - 770
Mesh aperture (mm)*	25x25	25x25	25x25	25x25
Roll length (m)	100	100	100	100
Roll width (m)	2.2 - 5.3	2.2 - 5.3	2.2 - 5.3	1.5 - 5.3
Roll weight (kg)	64 - 154	120 - 290	135 - 325	130 - 450

\* Product also available with either (a) pressure sensitive self-adhesive or (b) geotextile backing

Tolerance exists on properties

+ Other mesh aperture sizes available to order

MacTex® H is a non-woven geotextile, manufactured from needle punched and thermocalendared polypropylene filaments. It is a good quality general purpose geotextile, ideal for use in many construction applications.



#### Uses

- Separation of good quality soils from poor quality materials
- Filtration layer beneath rip-rap or Reno Mattresses within water/channelling works
- Used in conjunction with geogrids, on site haul-roads and access tracks

#### Benefits

- Good puncture resistance
- Long design life
- CE marked

Product*	500	1000	1500	2000	H2800	H3500	4000
Tensile strength - Longitudinal (kN/m)	5	8	13.5	16.5	21	24	26
Tensile strength - Transverse (kN/m)	7	9	13.5	16.5	21	24	26
CBR static puncture resistance (N)	1100	1500	2200	2750	3400	3900	4400
Permeability normal to plane (l/(m² sec))	115	110	80	70	55	50	40
Mass per unit (g/m²)	90	110	170	210	270	300	330
Dynamic puncture resistance (mm)	35	35	25	19	13	12	11
Roll sizes	4.5x100	4.5x100	5.85x100	5.85x100	2x100	2x100	5.85x100
	5.85x100	5.85 x 100			5.85x100	5.85x100	
Roll weight (kg)	42	50	102	125	144	60	195
	55	69			159	178	
Roll diameter (m)	0.28	0.3	0.37	0.38	0.44	0.46	0.48

\* Intermediate grades available to order

Tolerance exists on properties



A woven geotextile manufactured from weaving UV stabilised polypropylene yarns to provide a bi-directional geotextile for simultaneous soil stabilisation and separation functions.



#### Uses

- Road base (subgrade) stabilisation
- Access over soft/wet ground
- Haul roads within mines, wind farms, agriculture, forestry and military
- Working platforms for piling rigs and cranes

#### Benefits

- Reduces the thickness of granular materials needed for the same fatigue life
- Reduced differential settlement and rutting vs un-stabilised road
- Reduced rutting and maintenance of tracks
- CE marked

Product*	5S	6S	8S
NTS - Longitudinal (kN/m)	≥50	60	80
Typical strain @ NTS - Longitudinal (%)	≤11%	11%	11%
Tensile strength @ 5% strain - Longitudinal (kN/m)	27	31	39
NTS - Transverse (kN/m)	≥50	60	80
Typical strain @ NTS - Transverse (%)	≤8%	8%	9%
Tensile strength @ 5% strain - Transverse (kN/m)	38	45	53
CBR static puncture resistance (kN)	6	8	12
Mass/unit area (g/m²)	250	290	400
Roll length (m)	100m		
Roll width (m)	5.2m		
Roll weight (kg)	135	155	215

NTS: Nominal tensile strength

\* Other strengths available to special order

Tolerance exists on properties

A woven geotextile manufactured from weaving high tenacity polyester yarns to provide a geotextile for simultaneous soil stabilisation and separation functions. It offers short term soil reinforcement functionality.



#### Uses

- Embankment basal reinforcement
- Soft ground stabilisation where a high strength, low strain geotextile is needed
- Void spanning over old mine workings or natural voids

#### Benefits

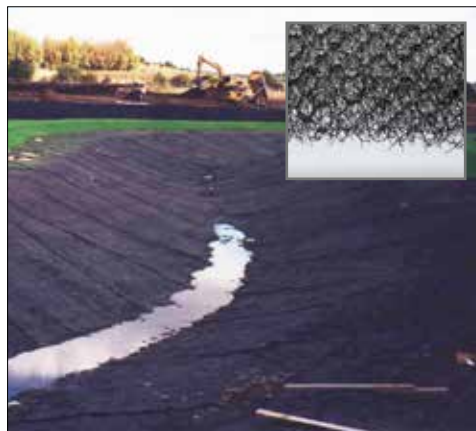
- CE marked
- Short to medium term applications

Product*	10	20	30	40	60	10S	12S	20S
Tensile strength - Longit. (kN/m)	110	220	330	440	660	110	130	220
Strain @ max load - Longit.	10%	10%	11%	12%	11%	10%	10%	10%
Tensile strength - Transv. (kN/m)	55	55	55	55	55	110	130	220
Strain @ max load - Transv.	10%	10%	11%	11%	10%	9%	10%	10%
Roll length (m)	100	100	100	100	50	100	100	100
Roll width (m)	5.4	5.4	5.1	5.1	5.1	5.4	5.4	5.4
Roll weight (kg)	150	234	306	385	575	210	260	365

\* Intermediate strengths available to special order up to 1350 kN/m

Tolerance exists on properties

Enkamat® is a permanent 3D erosion prevention mat manufactured from polyamide monofilaments. It is secured to the vulnerable surface or slope to prevent erosion caused by water flow, run-off or rain fall.



#### Uses

- Protects vulnerable soil slopes at risk of surface erosion
- Channel banks
- Root-reinforcement mat to support vegetation during establishment

#### Benefits

- >95% void volume: ideal to establish vegetation
- Inert - can be used in potable water reservoirs
- CE marked

Product	7010	7018	7020	7220
Polymer	PA	PA	PA	PA
Weight (g/m <sup>2</sup> )	290	290	400	400
Thickness (mm)	10	18	17	18
Structure type	open	open	open	open, one side flatback
Void volume	>95%	>95%	>95%	>95%
Roll length (m)	150	120	100	60
Roll width (m)*	1.95	1.95	1.95	1.95
Roll diameter (m)	1.15	1.3	1.3	1.2
Roll weight (kg)	82	74	84	52

\* Other widths available to special order  
Tolerance exists on properties

MacMat® R is a permanent 3D erosion prevention mat manufactured from polypropylene monofilaments, reinforced by either steel wire woven mesh or polymeric geogrid reinforcement.



#### Uses

- Protect vulnerable soil slopes at risk of aggressive surface erosion
- Protect channel banks and watercourses
- Punch resistance and tensile strength enable its use with soil nailing to provide a slope stabilisation system

#### Benefits

- >90% void volume: ideal to establish vegetation
- ETA approved and CE marked
- Strengths from 37-200kN/m
- High puncture resistance and tensile strength
- Available in green (black and brown mats to order)

Product	R1 8127G0	R1 055	R1 110	R1 200
Geomat polymer	PP	PP	PP	PP
Reinforcement (woven)	Steel mesh 8x10	Woven PET geogrid	Woven PET geogrid	Woven PET geogrid
Reinforcement coating	GalMac® + Polymer	Polymeric	Polymeric	Polymeric
Tensile strength - Longit. (kN/m)	55	55	110	200
Void volume	>90%	>90%	>90%	>90%
Weight (g/m <sup>2</sup> )	2130	700	820	1000
Thickness (mm)	12	15	15	15
Roll length (m)	25	40	40	40
Roll width (m)	2	4.35	4.35	4.35

Tolerance exists on properties

Biomac® is a biodegradable erosion protection blanket made from natural fibres. When secured to the soil slope, it offers immediate erosion protection to the soil during the establishment phase of seeding and planting.



#### Uses

- Protects vulnerable soil slopes at risk of surface erosion
- Encourages new plant growth
- Coir logs used in low-flow streams and channels to protect river banks at the water line

#### Benefits

- 1-2 year functional life depending on exposure
- Coir logs provide a hospitable environment in which to establish vegetation

Product	Biomac® C	Biomac® CJ	Coir Log
Fibre content	Coir	Coir/Jute	Coir
Containment scrim net	Lightweight polymer scrim	Woven jute nets	PE netting**
Tensile strength - Longit. (kN/m)	3.7	4.7	N/A
Weight (g/m²)	350	450	30kg/3m long log
Thickness	10	12	300mm (diameter)
Roll length (m)	35	35	3
Roll width (m)	2.4	2.4	Density 110kg/m³

Tolerance exists on properties

\*\* Coir net is also available upon request

Nominal weight - natural product can vary

A drainage geocomposite designed to replace gravel drains. It is available in a multitude of combinations of drainage cores protected on one or both sides by geotextiles and/or a geomembrane to suit the task.



#### Uses

- Removes excess water from soils
- Replaces gravel drains behind retaining walls and tunnels
- Trench drains for highways and railways
- Gas drainage or leachate detection in landfills or mines

#### Benefits

- Reliable lab-tested long-term drainage performance
- Customisable to suit client needs
- Reduces gravel quarrying and transportation: lower carbon footprint
- Simple to install

Product	M1121	M1201	W1041	W1061	W1101	TD100	TD200
Thickness at 2kPa	14.0	20.0	4.1	6.1	10.0	11	11
Mass per unit area (g/m²)	840	950	560	670	1240	800	800
In plane flow MD (l/(m.s))							
Gradient i=	0.03	1.00	0.03	1.00	0.03	1.00	1.00
20kPa (Soft/Soft)	-	2.50	-	4.80	-	0.65	-
20kPa (Rigid/Soft)	0.38	2.80	0.70	5.20	0.20	0.80	0.20
50kPa (Rigid/Soft)	0.12	1.00	0.28	2.40	-	-	-
100kPa (Rigid/Soft)	0.03	0.30	0.07	0.80	0.12	0.60	0.15
200kPa (Rigid/Soft)	-	-	-	-	0.09	0.40	0.10
400kPa (Rigid/Soft)	-	-	-	-	-	-	-
Roll width (m)	2	2	4.3	4.2	4.15	1	2
Roll length (m)	35	28	100	75	50	35-50	35-50

Tolerance exists on properties

Intermediate grades are available across the range of products

MacDrain® TD is suitable for trench drains. It has a geotextile pocket in which a perforated pipe can be placed. Pipe not included with MacDrain® TD



MacLine® GCL is a geocomposite of a layer of bentonite encapsulated between two geotextiles to form a liner for numerous fluid containment applications.



#### Uses

- Attenuation pond lining
- Lagoons and landfill impermeabilisation
- Waterproofing of drainage ditches and watercourses

#### Benefits

- CE marked
- High internal shear resistance for steeper slope applications
- Self-seals if locally punctured

Product	GCL W10	GCL W15	GCL W20	GCL W30
Bentonite mass @ 12% moisture content (g/m <sup>2</sup> )	4000	4500	5000	6000
Thickness (mm)	6	6.5	7	7.8
Permeability (m/s)	1.5x10 <sup>-11</sup>	1.5x10 <sup>-11</sup>	1.5x10 <sup>-11</sup>	1.5x10 <sup>-11</sup>
Weight (g/m <sup>2</sup> )	4300	4800	5300	6300
Roll width (m)	5	5	5	5
Roll length (m)	40	40	40	40

Tolerance exists on properties

Upper textile is woven PP geotextile. Lower textile is non-woven PP geotextile.

MacWall is a segmental retaining wall combining the aesthetics of a blockwork wall, with the reassurance of geogrid soil reinforcement. The blocks have an attractive split face.



#### Uses

- Retaining walls in housing, retail and institutional developments
- Highway retaining walls

#### Benefits

- Available in a range of colours
- Mortarless and simple to construct
- Can incorporate curves and corners
- Granular backfill to geogrids simplifies construction
- Geogrid soil reinforcement strengths and lengths are determined through design
- BBA certified block available on request

Product	Vertica Block	Vertica Corner	Vertica Cap
Size (mm) L x D x H	457 x 280 x 200	457 x 228 x 200	438/303 x 254 x 100
Mass per block (kg)	37.7	42	20
Face angle of wall	4°	4°	N/A
M <sup>2</sup> per pack	4.10	N/A	N/A
No. per m <sup>2</sup>	10.9 blocks/m <sup>2</sup>	N/A	2.7 caps/Lm
Units per pack (No.)	45	40	48
Weight per pack (tonnes)	1.79	2.0	0.94

Tolerance exists on properties