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# BIOFILTRATION PRODUCTS

**FiltaOdor**<sup>™</sup>

Odour Biofiltration

**FiltaWater**<sup>™</sup>

Wastewater Filtration

**FiltaBin**<sup>™</sup>

Portable On-site Filtration

**FiltaMedia**<sup>™</sup>

Organic Filtration Media

**FiltaPod**

Floating Wetland Pods

**FiltaBoom**<sup>™</sup>

Silt Retention Boom

**CoirNet**

Coir Geonetting

**SC-1000**

Acid Sulphate Amendment



# FiltaOdor™

## Odour Biofiltration



FiltaOdor™ Odour Biofiltration system is a compact and modular design providing sustained and efficient biological odour control. It removes and destroys H<sub>2</sub>S, organic odours and VOC's at a lower overall cost compared to any other commercially available destruction or treatment technology. This unique design optimises the biodegradation process through the control of even air distribution, filter bed moisture, air humidity and thermal control. The design and the use of a unique amended organic media provide a low cost, long lasting, and low maintenance system.

- MODULAR STACKABLE CONSTRUCTION
- ENVIRONMENTAL CONTROL SYSTEMS
- LONG LIFE MEDIA (+5 years)
- SUSTAINABLE TECHNOLOGY
- COMPACT FOOTPRINT
- LOW MAINTENANCE
- COMPLETE BREAKDOWN OF CONTAMINATES
- SPECIFIC MEDIA PROFILE
- CONSTRUCTED IN GRP TO AS2634-1983 STANDARDS
- COMPLIES TO WAS121-2000 WATER INDUSTRY STANDARDS
- OPTIONAL SCADA ALARMED MONITORING

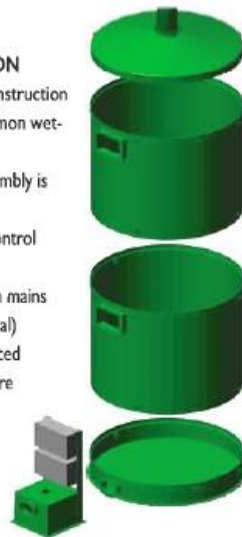
Model & Format	Approx. Flow Volume (m <sup>3</sup> /hour)	Approx. Flow Volume (Litrs/Sec)	D	H	
<b>BF1200 Biofilter Series</b>					
BF1200/1	1 module	260	72	1.2m	3.5m
BF1200/2	2 module	520	144	1.2m	6.0m
BF1200/3	3 module	780	217	1.2m	8.5m
BF1200/4	4 module	1050	292	1.2m	11.0m
<b>BF2400 Biofilter Series</b>					
BF2400/1	1 module	1050	292	2.4m	3.5m
BF2400/2	2 module	2100	583	2.4m	6.0m
BF2400/3	3 module	3190	886	2.4m	8.5m
BF2400/4	4 module	4190	1164	2.4m	11.0m
<b>BF3600 Biofilter Series</b>					
BF3600/1	1 module	2250	625	3.6m	3.5m
BF3600/2	2 module	4550	1264	3.6m	6.0m
BF3600/3	3 module	6850	1903	3.6m	8.5m
BF3600/4	4 module	9090	2525	3.6m	11.0m
<b>BF4800 Biofilter Series</b>					
BF4800/1	1 module	4190	1164	4.8m	3.5m
BF4800/2	2 module	8300	2306	4.8m	6.0m
BF4800/3	3 module	12500	3472	4.8m	8.5m
BF4800/4	4 module	16750	4653	4.8m	11.0m
<b>BF1200 Compact Series</b>					
BFC1200/1.5	Single chamber	170	47	1.2m	2.0m
BFC1200/3.0	format with	340	94	1.2m	3.6m
BFC1200/4.5	internal decks	520	144	1.2m	5.1m

### UNIQUE MODULAR DESIGN & CONSTRUCTION

The design of the FiltaOdor™ system reduces the construction footprint by adding filtration cells on top of the common wet-well and inlet control.

Construction time is reduced significantly as the assembly is handled in 3 stages:

1. Fixing down the wet-well and attaching the inlet control box (ICB) to the wet-well.
2. Inlet air ducting is connected to the ICB along with mains water, waste to sewer and 240v power (solar optional)
3. Filtration cells and lid are fitted with the media placed in each cell prior to positioning. The irrigation lines are connected to the ICB



### FiltaMedia™ BIOFILTRATION MEDIA

Bioaction FiltaMedia™ is a homogenous organic media that is amended with a granular mineral which is inoculated with living microorganism specific to the odour profile. This technology of stabilising microorganisms on the zeolite was developed by the Environmental Biotechnology Cooperative Research Centre within the Odour Unit group. The media profile allows air to evenly diffuse across the filter bed. FiltaMedia™ is a robust media that has a very high lignin content that resists biological degradation (composting). This avoids compaction of the media bed and potential venting. Its high moisture holding capacity, consistent air-filled porosity and large surface area (6000m<sup>2</sup>/tr) maintains and encourages the development of a highly productive biomass.



### COMPACT SERIES BIOFILTER

These compact units are designed for urban and industrial applications where space is of a premium. They are a single chamber construction with levels of filtration media. The units come complete with draw fan, media irrigation, recirculating pump and wet-well level control. They are suitable to be mounted directly above a sewer wet-wells and can be a replacement of activated carbon filter units.

### BIOFILTRATION OPTIONS

Bioaction offer a range of biofiltration options that deploy the unique technology designed by the company. These include tradition "soil bed" biofilter that are designed to improve space, utilise FiltaMedia™, and offer environmental features such as water recycling and efficient media irrigation.



# FiltaWater™

## Wastewater Filtration



Bioaction has developed a number of filter applications for the removal of contaminants such as nutrients, hydrocarbons, and heavy metals from stormwater and drainage water. Typically Australian soils have very poor humus and poor cation exchange that allows soluble nutrients and emulsified hydrocarbons to leach into the water table. These contaminants have a serious environmental impact particularly to the aquatic eco system and is often seen as algal blooms. The fact is that the consequences are much more devastating:

- Waterways and water bodies can be devoid of life through oxygen depletion
- Water bodies can become polluted
- Aquatic mutation can cause species imbalance
- Introduced aquatic flora will flourish at the expense of indigenous species
- Native flora will either die or be overrun by introduced and exotic flora

The systems developed by Bioaction utilise FiltaMedia™ which is a unique organic filter media that can be used in environmental filtration. Its resistance to biological and mechanical degradation allows it to be used as the primary media in the designed filters.

FiltaMedia™ can be amended with natural additives for specific water treatment such as Acid Sulphate leachate (sulphuric acid).



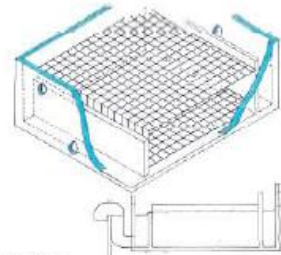
### FILTER TRENCH

Soils contaminated with hazardous organic pollutants and/or heavy metals are a serious environmental problem. These contaminants are released in groundwater runoff in solution or bound in the silt. The Filter Trench design is constructed in a sloping trench and filled Bioaction FiltaMedia™ then covered with Coir Geo Mesh, rocks and rubble (this allows side infiltration). The system incorporates a number of simple design elements such as retention pit, trench and retention pond. The lateral design of the Filter Trench increases retention time and absorption capacity without restricting flow. The characteristics of the FiltaMedia™ and the trench design will promote the development of micro-organisms that oxidise the organic contaminants.



### FILTER GABIONS

These provide a simple solution to removing contaminants from stormwater in formed drainage structures. They are designed to have easy access for replenishment and robust enough to withstand major storm events. The FiltaMedia™ is held in coir baskets that allow infiltration and because of the mesh size avoids the typical blinding. These baskets can be removed from the metal structure for easy maintenance. The gabions are designed to the particular situation whereby the depth and width is determined by the drainage structure.



### FILTER TRAP

The Filter Trap is designed using a "bottom up" filtering system that provides even distribution across the filter bed. The structure is structurally sound to withstand major storm events whereby high flows can bypass the filter. Filter Trap can be used for stormwater treatment as well as dewatering which makes it a real solution for treating wet-waste leachate. They can be engineered post Gross PollutantTrap (GPT) to remove soluble contaminants and hydrocarbons. It is designed for easy servicing and maintenance to remove filter media and retained solids such as organic matter and silt. Filter Trap can be designed to the particular application determined by flow rates and contaminate load.



### FiltaBin™ ON-SITE PORTABLE FILTER

The patented design of FiltaBin™ is a practical solution to the management of contaminated wastewater on-site. It avoids the potential of contaminated wastewater being released into the environment. FiltaBin™ can be unloaded and loaded at the point of treatment, and they can be set up in series or parallel to increase flow rate or flow volume. The system offers real cost benefits over traditional wastewater management particularly the downtime and disposal costs. Wastewater is pumped using a flex-drive pump or the like, directly to the inlet where the flow rate is controlled to suit the FiltaBin™ application and flow capacity.



### FiltaBoom™ SILT & CONTAMINANT BOOM

FiltaBoom™ has been designed to improve the way in which operators manage silt and contaminant retention. Many contaminants including hydrocarbons bind themselves to soils and the need to retain them is critical. Unlike traditional silt curtains and hay bales FiltaBoom™ can trap suspended soils and contaminants while allowing the storm water to flow through. It does not blind up and can be left to biologically degrade over time and become part of the soil structure. Available 200mm x 3mtr lengths.



# FilterBin™

## Portable On-site Filtration



### PORTABLE ON-SITE FILTRATION

FilterBin™ was developed and patented by Bioaction to provide an efficient and cost effective solution for operators and contractors to safely manage industrial and environmental wastewater disposal and reduce the incidence of potential environmental contamination.

The applications for on-site filtration includes:

- Infrastructure manholes and in-ground manway accesses
- Drainage pits
- Retention and settlement ponds
- Liftwells
- De-watering contaminated sites
- Oil tank retention tanks and bunds

The system offers significant cost benefits over traditional wastewater removal costs, hazardous waste disposal costs and the reduction of downtime. Designed to use standardskip bin transport, the FilterBin™ can be delivered directly to the point of processing.



### FLOW RATE & CAPACITY

FilterBin™ has been designed for simple site management whereby flow rates and capacity can be managed by untrained staff. Inflow is predetermined by a control restrictor which allows the wastewater to be pumped with a range of pumping options. FilterBin™ can be setup in series to increase capacity or in parallel to increase flow volume. Once set all the FilterBins™ operate at the same rate. The standard FilterBin™ format can process up to 200 litres per minute within overall capacity of 300,000 litres depending on the contaminate and its loading.

### FilterMedia™ ORGANIC FILTER MEDIA

Bioaction have advanced the application of organic media for a range of environmental filtration applications. FilterBin™ has been designed to apply this media and the "bottom-up" filter design means that there is even infiltration throughout the filter bed to maximise the contact time with the media. Further advances have been made in amending the filter media for specific filtration needs. These amendments are natural mineral and organic inputs that match the media so not to create stratas or disaggregation.

### REDUCE ENVIRONMENTAL CONTAMINATION

FilterBin™ minimises the risk of environmental contamination which is a responsibility of any contractor or operator. FilterBin™ provides a significant management process to manage risk and deal with many of the common wastewater contaminants:

- Hydrocarbons
- Ammonium - Organic
- High level BOD's
- Acid Sulphate Soil leachate
- Suspended solids



# FiltaMedia™

## Organic Filtration Media

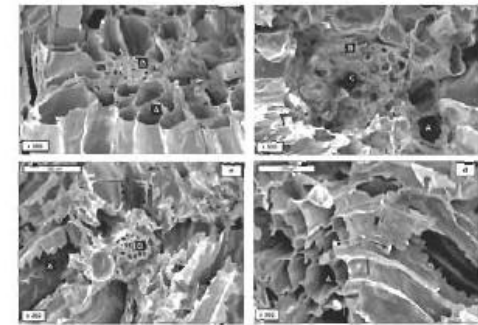


Traditional organic media such as bark, wood chips and green waste are problematic when used as a biofiltration media. Rapid, irregular decomposition and mechanical degradation results in compaction, which reduces flow and increases back pressure or develops preferential pathways and venting. High maintenance and replenishment costs limit their commercial viability regardless of their base costs.

Bioaction FiltaMedia™ is a significant advancement in organic filtration media:

- Robust - resists biological and mechanical degradation
- Even diffusion – consistent structure with high “air-filled porosity”
- High water holding capacity – large surface area (6000 m2/ltr) & excellent capillary action
- Free draining – open and porous structure
- Biological host – surface area, moisture retention and thermal buffering optimises microorganism population
- Resists compaction – increases bed depth and reduces footprint

Bioaction FiltaMedia™ can be used for a range of filtration applications such as biofiltration of odorous air, and wastewater filtration.



FiltaMedia™ is convenient to use and are available in bulk or 25kg bales which are an efficient way to manage installation and maintenance. The bales are compacted 2:1 to improve freight and handling logistics and each bale yields 200ltrs.

FiltaMedia™ is effective in a range of environmental filtration applications as it treats a range of organic and inorganic contaminants such as hydrocarbons, heavy metals, nutrients, acid sulphate leachate, suspended solids and silt.

Wastewater Filtration - FiltaMedia™ can be effectively used in a range of wastewater filtration applications such as:

- **Filter Trench** - FiltaMedia™ is laid into trenches to provide a lateral filtration format. Wastewater is directed into the trench where contaminants and nutrients are entrapped. The moisture holding capacity and air filled porosity promotes biological oxidation of contaminants.
- **Filter Gabions** - FiltaMedia™ is housed in a formed structure in a storm water drain. The media is held within a geo-basket that resists blinding and allows for easy replenishment and maintenance.
- **Filter Trap** - FiltaMedia™ is used in a concrete structure that allows “bottom up” filtration. It can provide post “Gross Pollutant Trap” treatment of polluting contaminants.
- **On-site Portable Filtration** - FiltaMedia™ is used in the patented FiltaBin™ which provides on-site filtration of contaminated wastewater. The mobile units can be set up in series to increase capacity or in parallel to increase flow rate.

Biofiltration - FiltaMedia™ is a highly effective biofiltration media providing the optimum conditions for odour entrapment and biological degradation.

FiltaMedia™ is made from Coir Husk which is a natural organic material derived from coconut production. It is the ultimate renewable resource as it grows without the need for irrigation, fertilisers or pesticides. The fruit is harvested without destroying the tree which continues to yield fruit for many years. Coir demonstrates polymer-like characteristics, and is very robust. It maintains its integrity in acid and alkaline state while resisting mechanical degradation in waste water filtration. The high lignin content of Coir resists biological degradation. Its open capillary structure, and surface area provides a free-draining media with moisture retention capacity up to 70%.



# FiltaBoom™

## Silt Retention Boom



FiltaBoom™ Silt Retention Boom is a new innovation by Bioaction in conjunction with its partner Galuku International. While the concept of a retention boom (wattle) is not new, the use of Bioaction FiltaMedia™ within Coir Geonetting makes FiltaBoom™ a very functional solution for silt and contaminate retention. FiltaBoom™ is a very robust and durable construction that will meet the demands of environmental installations.

- Easy and simple installation
- Retains suspended solids (silt & organic matter) and contaminates
- Allows water infiltration and avoids water backing-up
- Open matrix of the FiltaMedia™ and Coir Geonetting reduces blinding
- Robust construction avoids vehicle damage
- Natural organic material can be left to incorporate into the landscape
- Avoids the use of star pickets and wooden stakes



### AVOID THE PROBLEMS OF TRADITIONAL SILT RETENTION

Water which flows or is pumped from land disturbance sites can be contaminated by suspended, dissolved, floatable and settleable soil materials, oils, detergents, litter, fertilisers, alkaline cement materials and other chemicals. Soil nutrients and chemical pollutants become attached to and are transported by sediment particles as a result of soil erosion, dewatering of trenches, washing of vehicles, cleaning of concrete supply equipment, careless waste disposal and other similar incidents.

Many of the traditional silt retention systems used today do not adequately address the problem:

- Retaining solid and dissolved contaminates
- Providing adequate flow-through to avoid water build up
- Preventing water diversion and scouring

FiltaBoom™ provides the simple, safe and effective solution!



### EASY & SAFE INSTALLATION

FiltaBoom can be easily installed by using a tent peg type stake that is driven through the 150mm leading seam to below the surface.

This installation process avoids the risks associated with using metal star pickets, metal rods and wooden stakes.



### TURFING ENHANCES STABILISATION

FiltaBoom has been designed to have turf laid on the leading seam to increase steep-sloped soil stabilisation. Turf immediately roots to the netting seam of the FiltaPod and provides a stable substrate for the turf to establish.



### USE WITH COIRNET

FiltaBoom can be used with CoirNet on sites with erosion potential and where natural regeneration is to be encouraged. CoirNet works synergistic with FiltaBoom as they have the same material properties such as moisture holding and nutrient retention.

### FLEXIBLE TO FOLLOW CONTOURS

FiltaBoom is easily laid in drainage swales or eroded gutters. They can be layered up against each other to form a banded structure which can reduce water flow and reduce its destructive energy. Again the installation does not use any protruding fixturing.



### ROBUST CONSTRUCTION

FiltaBoom™ is made from Coir Geonetting filled with FiltaMedia™ is a renewable organic fibre from coconut production. It has a polymer-like characteristic making a very robust and structurally sound. It can resist vehicular damage and will not degrade due to environmental exposure. Unlike traditional silt retention, FiltaBoom™ can be left on the ground well after use and it will naturally incorporate into the landscape.

Turf strips can be laid on the upside of the slope hard up against the FiltaBoom™ and covering the exposed seam to increase silt retention and promoting the establishment of grass.

FiltaBoom™ can also be used for bank stabilisation in drainage swails and it can be used for direct planting into the boom itself.



# FiltaPod™

## Floating Wetland Pods



### STRENGTH & DURABILITY

FiltaPod is made of coir fibre and netting which is a natural renewable organic material. It demonstrates high mechanical strength and due to its high lignin content it resists biological degradation. It is not less sensitive to UV degradation due to leaching out of photo-sensitive materials during the production process. FiltaPod uses PVC floatation devices to provide buoyancy and structural strength to the units. They can be tethered together and anchored using chain or wire rope. Planting can be done on land and easily carried to the location by two people. Plants are held in place by the fibrous coir around the roots while the netting supports the stems of the plant. Coir is considered to be inert and does not have any impact on sensitive ecologies.

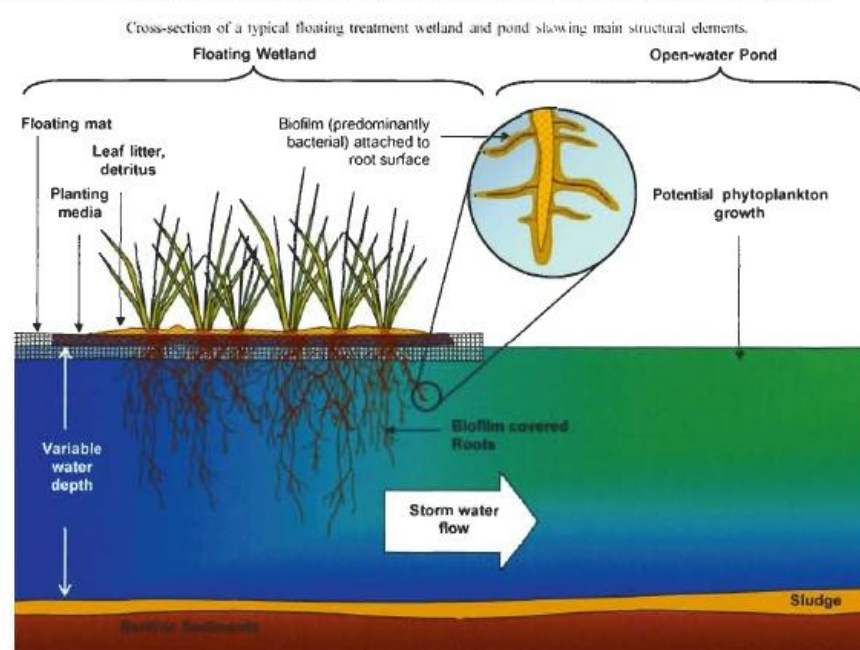


FiltaPod is floating host for the deployment of wetland plants on the surface of ponds and waterways. Wetlands have proven to be an effective and efficient method for the treatment of contaminated stormwater. These FiltaPod allow water flow to be through the root mass rather than the stems of sediment-rooted plants. This process significantly increases surface area contact with the contaminated water. Floating wetlands offer significant impact to rainfall-driven stormwater treatment applications as they are little-affected by fluctuations in water levels that may submerge and adversely stress bottom-rooted plants. The FiltaPod allows wetland designs to be incorporated into smaller areas such as drains. These can be an engineered system that allow for easy access for the removal of sediment and trash without damaging wetland ecosystems.



### NATURE'S BIOFILTER

Floating wetland plants display over 100% increase in root development than the same plants rooted in gravel or sediment. This dramatically increases the surface area and reactivity to pollutants. Scientific research in Advanced Floating Biofiltration also known as Floating Treatment Wetlands (FTW) and Floating Reedbeds indicates the following is routinely achievable:  
 TN Reduction 40-90%  
 TP Reduction 50-95%  
 TSS Reduction 50-100%  
 Transparency 50- 252%  
 Heavy Metals Reductions in Arsenic, Copper, Zinc, Manganese, Mercury methylation, particularly when metals are colloidal, colloiddally suspended. The fine roots capture nutrients and metals on the algal and bacterial biofilm, creating a thick mesh to capture all pollutants.



### FLOATING TREATMENT WETLAND VS CONVENTIONAL STORMWATER PONDS

Floating treatment wetlands possess a number of important structural and functional differences to ponds and conventional sediment-rooted wetlands. Traditional wetlands are generally effective at removing suspended solids through sedimentation, although less effective at removing dissolved and colloidal pollutants. They provide ideal conditions for the growth of algae. Although providing beneficial functions, excessive algal growth can lead to a decline in water quality. Floating treatment wetland reduce light penetration in the water column and thus reduced algal growth. A significant problem encountered with stormwater treatment wetlands is the die-back of rooted vegetation if the water levels remain high for extended periods, or scouring channels develop during peak flows. To overcome the problem, wetlands often need to be relatively large to provide sufficient hydraulic buffering and maintain shallow water depths in the range of 0.3 - 0.5m. The ability of floating wetlands systems to instantaneously adjust to fluctuating water levels overcomes these issues.



# CoirNet

## Coir Geotextile Netting



CoirNet is a natural innovative way to improve soil stability and add value to the construction. CoirNet is a highly renewable fibre made from coir which is strong and robust to withstand the rigors of soil stabilisation and the time required for revegetation. CoirNet harmonises with soil and vegetation, providing an active buffer to enhance planting or natural regeneration. CoirNet can be used for:

- Road Embankments
- Bio Engineering
- Soil Erosion Control
- Capping Land Fills
- Mining And Wastelands
- Stream Bank Stabilisation
- Golf Courses
- Landscaping
- Ski Slopes And Ski Lift Tracks
- Re-Vegetation
- Shoreline stabilisation
- Roof Greening



### BENEFICIAL ENGINEERING

The most effective way to protect slopes and reduce erosion is through natural vegetation. This reduces the kinetic energy of rain and reduces runoff velocity. When revegetation is required there is the need to initially stabilise the soil and then create an environment to allow regeneration to occur through planting or natural regeneration. The use of proper soil stabilisation methods is key, and there are a number of methods and materials used for this process. The optimum method should demonstrate beneficial engineering properties but also aid regeneration through the mechanical retention of soils as well as the retention of moisture and nutrients. CoirNet is a highly competitive natural application because of its robust structure and its retention of moisture and nutrients. Its open matrix also adds in natural regeneration.



### STRENGTH & DURABILITY

CoirNet demonstrates excellent mechanical strength over other natural soil stabilisation options such as Cotton, Jute and Sisal due mainly to its high lignin to cellulose ratio. It can be expected to have CoirNet last 4 - 7 years. It is much less sensitive to UV due to leaching out of photo-sensitive materials during the production process. Tests conducted in highly fertile soil, high humidity (90%) and moderate temperature revealed that coir retained its strength after one year whereas cotton degraded in six weeks and jute in eight weeks. Alternate wetting and drying of coir does not accelerate the degradation of the fibre.



### MOISTURE & NUTRIENT RETENTION

CoirNet can absorb and retain moisture up to 40%. This hygroscopic property of the coir fibre helps to retain soil moisture. The image above shows turf rooting into the coir netting providing the buffering required to enable turf to establish itself. CoirNet plays a significant role in retaining valuable soil nutrients to improve regeneration and reduce leaching into waterways. Trials conducted under the Sustainable Watershed Management reported the reduction of nutrient losses when using a coir fibre geonetting in conjunction with planting versus untreated soil.

Nutrient loss reduction

Nitrogen	- 83.8%
Phosphorous	- 71.4%
Potassium	- 73.4%
Organic Carbon	- 64.2%



### FLEXIBILITY IN APPLICATION

CoirNet can be used in conjunction with FitaBoom which provides a high level silt retention, soil stabilisation and soil regeneration. It can be used in steeply inclined surfaces or in shallow swales, moist wet ground or when water is intermittent, to hold soils structurally or laid across soil surfaces.



# SC 1000

## ACID SULPHATE SOIL AMENDMENT



Acid Sulphate Soils (ASS) in their waterlogged, reduced state, are environmentally benign. Furthermore, in this state and never oxidised, the material will have a pH close to neutral. If, however, they are allowed to oxidise, sulphuric acid is produced. It is this acid and associated by-products which can have potent environmental implications.

The acidity of the soil or water affected by ASS leachate can be ameliorated by neutralising the acid with various forms of alkaline materials. Such neutralises acidity or can prevent this acidity from developing in the first place.

When SC 1000 is added to the soil, the export of oxidised products (iron, aluminium, acid and heavy metals) is minimised and the oxidation will be alleviated.

SC 1000 offers a balanced buffering, neutralisation and soil remediation composite for acid sulphate, and potential acid sulphate, soil management.

**NATURAL SOIL REMEDIATION:**

- 1 - Soil Neutralisation
- 2 - Soil Balancing
- 3 - Nutrient Protection
- 4 - Soil Conditioning



**SOIL NEUTRALISATION**

Unlike highly alkaline hydrated lime, SC 1000 is not soluble and does not promote slaking of the soil or the dilemma of caustic leaching. SC 1000 is mildly alkaline but insoluble in normal soil environments.

SC 1000 does not contribute to the available pH of the soil until it is in contact with an acidic medium. Acid Sulphate Soils react with SC 1000 to form neutral, soil sweetening calcium sulphate (gypsum). SC 1000 has a strong buffering capacity and neutralises soil acidity on a "as needed" basis.



**SOIL BALANCING**

SC 1000 builds and maintains the calcium/magnesium balance in soil. Proper Ca:Mg balance creates and maintains optimal conditions in the soil for processes that naturally supply nutrient to the plant in a consistent and timely manner. Neutralising inherent acidity using only calcium ions, (liming techniques), runs a high risk of creating a Ca:Mg imbalance and thereby inhibiting the potential for friable healthy soil. SC 1000's process involves a balanced ratio of magnesium and calcium ions that ensures the soil:

- maintains optimum porosity
- permits better access for plant root system
- is able to maintain a high level of microbial activity
- allows a full range of nutrient elements to be available



**NUTRIENT PROTECTION**

During the acid neutralisation process, potential soil nutrients can be lost through sublimation. SC 1000 has the cation exchange capacity to absorb ammonia (nitrogen), potassium, calcium and other plant nutrients within its mineral structure where they are not water soluble and are plant-available. This "insoluble but available" approach can provide a mechanism against over fertilisation of soil. SC 1000 contains a complex volcanic mineral that:

- Increases water holding capacity of soil
- High cation exchange - absorbs and makes nitrogen plant available
- Reduces nitrate & nitrite leachate
- Continues to reabsorb selected nutrients as they are taken up by plants
- Improves water infiltration into the soil profile



**SOIL CONDITIONING**

Natural plant-based Lignin polymers offer a unique soil conditioning balance to the SC 1000 formula and provide an excellent source of bio-available calcium, sulphur, sugar, sugar acids and organic carbon to soil. The lignin benefits include:

- Improved soil structure
- Increased nutrient exchange and retention
- Stimulated microbial growth
- Improved nutrient absorption
- Stabilised pH
- Improved stress tolerance of plants
- Increased root development

SC 1000 application rate guidelines for assessment:

ASS Potential	Oxidisable S (%)	Kg - SC 1000/mt3
Low	0.01	0.8
Low	0.05	4
med	0.1	8
High	0.5	40
V.High	1.0	80
Extreme	1.5	120

SC 1000 developed and manufactured by:

