

# POND COVER

A proven and efficient floating  
pond cover treatment system

 **SPEL**  
waterclean



## SPEL Environmental's floating treatment media - complete pond cover

The floating media, which can be used in any water environment requiring treatment, provide a lush and fertile base for plants and vegetation to grow. As the roots spread down through the fibrous structure of the media, an extraordinarily vast activated surface area is created for microbes and bacteria to take on their role of **bio-remediation** - the use of micro-organisms to remove pollutants.

The microbes and bacteria, which do not swim, and are UV sensitive, adhere to the roots and microscopic root hairs of the plants, and within the fibrous structure of the media themselves, secreting sticky extracellular proteins and exist in the environs of biofilms. It is within these biofilms which microbes and bacteria trap and digest odours and nutrients in wastewater.

What makes SPEL Environmental's floating treatment media a unique scientific innovation, with the potential to create a revolution within the water treatment industry, is the massive activated surface area they provide for microbes and bacteria to survive.



## Construction

SPEL Environmental's floating treatment media are made from 100 per cent recycled polyethylene terephthalate, commonly known as PET and used in plastic drink bottles, and cross linked, closed cell, Polyethylene by product. The recycled materials are made into a non-woven, non-toxic durable matrix of fibres. Dense and porous, it is extremely inert and has been coated in a UV resistant resin to US Environmental Protection Agency irradiation accelerated degradation standards.

## Effective

The process is simple, completely natural - and highly effective. You have the assurance of an installation that has been developed to exploit the unsurpassed water cleaning properties of naturally-occurring microbes.

## Minimal environmental impact

Using a waste product to bio-remediate waste, our floating treatment media have strong environmental credentials including:

- Satisfying stringent water quality consent requirements
- Eliminating the need for chemical dosing
- Eliminating the need for further high-impact 'concrete and steel' construction
- No energy used in the operation process; low energy in the manufacture process
- Zero-land use requirement
- Manufacture from recycled materials



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## Wastewater biological treatment

### Wastewater

Floating pond covers have proven efficient and low-cost enhancements to wastewater treatment plants - retro-fitted to existing facilities or encompassed into the design of new constructions - with extremely low operation costs. Truly environmentally-sound and sustainable, our floating treatment media have a dramatic effect on:

- Anaerobic digestion
- Odour mitigation
- BOD removal
- TSS removal
- Algae removal

These systems prove high rate performance in Wastewater treatment plants as retrofitted systems on existing ponds. Many of the Waterclean Technologies floating treatment media are achieving results as per below:

| Contaminant                  | Removal Rates |
|------------------------------|---------------|
| BOD5                         | > 80%         |
| Total Suspended Solids (TSS) | > 80%         |
| Odour Control                | Total         |
| Algae Control                | Total         |



### Flexible

Floating treatment media are completely flexible and can:

- Fit any existing space or water body shape
- Operate effectively in all climate and environmental conditions
- Operate in fluctuating water levels

## Industrial wastewater

Floating treatment media provide a low environmental impact, low cost option for industry waste treatment and can be used to deal with many different types of industry waste. The media have a remarkable ability to reduce a vast amount of industrial associated loadings and continue to operate in high levels of salinity, addressing a common problem for many industries.

Typical industrial applications include:

- Food processing
- Meat works
- Geothermal waste
- Timber processing
- Aquaculture
- Mining
- Landfill leachate



*...retro-fitted to  
existing facilities...  
with extremely low  
operation costs.*





## Algae control

Green and blue/green algae cannot reproduce during sustained periods of low/no light levels. Any period beyond 18 hours of no light causes algae to expire.

## Algae and pH

Floating treatment media **FTM** significantly helps with moderating pH if there is a reasonable level of cover. Design guidelines state to have sufficient cover to control algal biomass (via FTM shading and enhanced settling). It is the algal photosynthesis that causes elevation of pH. When their biomass is high they take up CO<sub>2</sub> for photosynthesis during the day faster than it can be replenished from the atmosphere. This modifies the carbonate equilibrium in the water making it become more alkaline. During the night the CO<sub>2</sub> becomes replenished from the atmosphere plus algal and bacterial respiration bringing the pH back to near neutral. Controlling algal biomass with the FTM will then enable biologically moderating pH fluctuations. Also the dissolved organic matter released by the FTM (especially as they mature) also assists in moderating pH.



## Cost savings

Floating treatment media require low capital investment with minimal operating and maintenance costs, and, there are no operational energy costs.

## Maintenance

Maintenance is minimal and simple, low cost and includes tasks such as checking anchors or tethers, and looking after plants with annual harvesting programs.

**Self-cleaning:** by constantly sloughing redundant biomass down through the roots system, and continuously renewing biofilm and root zones, our system avoids “plugging up”.

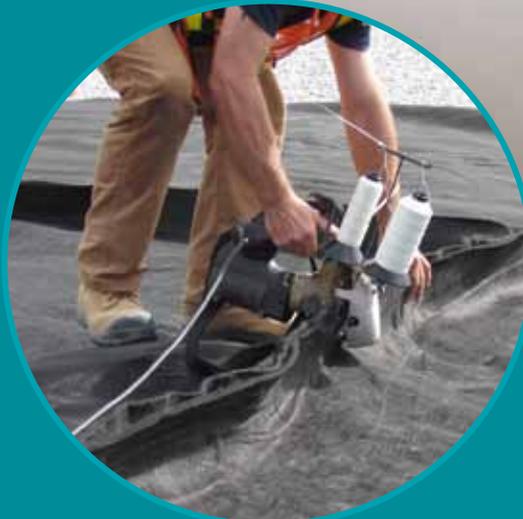
## Planting

The plant species suitable for floating media are selected according to the reserve buoyancy required for the application. Generally, terrestrial species such as wetland sedges, rushes and grasses are the best option as they develop superior root structures within the water to provide for an increased surface area. However, many other planting types are also used. Recommended planting density is three to five plants per square metre.

## Anchoring and tethering

The floating treatment media can be secured into position by anchoring or tethering, depending on local climate and water conditions. The technique we use is to secure to the embankment above the maximum water level.

The floating treatment covers are partially submerged which provides a “suction” effect to occur that creates a powerful anchoring mechanism, imparting the greater part of the forces needed for anchoring these systems in place.



*The floating treatment covers are partially submerged which provides a “suction” effect.*



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