

# AquaMats®

for Biofiltration

## Introduction

AquaMats® Technology provides the latest in surface area biotechnology to reduce BOD<sub>5</sub>, Ammonia, TSS and Phosphorus for wastewater treatment with AquaMats® for Biofiltration. Customers have described AquaMats® as “the most important invention since the pump” for water management!

If your wastewater treatment system has

- Difficulty in complying with ever-increasing governmental requirements on effluent discharge; or
- Grown beyond design capacity;

Contact your engineering consultant or an authorized Distributor or Dealer of AquaMats® for Biofiltration Products for retrofit or design information to increase processing capability with AquaMats® Technology.

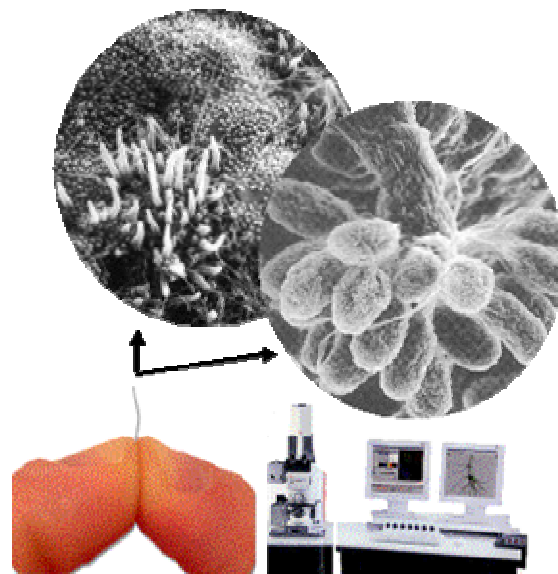
## How do AquaMats® for Biofiltration Reduce BOD<sub>5</sub> and TSS?

Throughout the aquatic world, from ocean reefs to our streams and rivers, surfaces provide the most efficient natural microbial processing of soluble nutrients. AquaMats® are engineered high surface area polymers designed to amplify natural microbial processing of nutrients in a convenient product that extends from the water surface vertically through the water column. With our UltraWeave® manufacturing process, each product unit provides system operators with thousands of square feet of effective surface area.

AquaMats® for Biofiltration reduce BOD<sub>5</sub> by addition of bioactive surface area that is specifically designed to convert the soluble nutrient constituents of BOD<sub>5</sub> into mineralized tissue. This tissue grows on the AquaMats® surfaces and periodically shears off those surfaces and settles for further biological treatment in the benthos to achieve removal of up to 95% of the load.

AquaMats® also function as hydraulic barriers that substantially increase the settlement of suspended solids for bacterial fixation in benthic sludge.

**Laser Confocal Microscopy images (10,000x magnification) depicting growth of typical bacterial/fungal growth within a SINGLE microscopically engineered pore on a SINGLE AquaMat fiber! Each AquaMat has millions!**



## How do AquaMats® reduce phosphorus discharge?

AquaMats® are a highly efficient means of attaining compliance with phosphorus discharge limits using natural processes. The upper UltraWeave® layer of AquaMats® for Biofiltration is engineered to promote benthic algae communities, which have among the highest known demands for phosphorus in their natural life cycle. (By weight, benthic algae cells fix and mineralize phosphorus at a rate 10 times the rate of fixation in bacterial communities.) Phosphorus is also fixed in the bacterial biofilms that dominate the lower UltraWeave® layers of AquaMats®. Taken together, AquaMats® for Biofiltration have the per unit capability to remove up to 250 mg per unit/day. (The highest sustained rates of phosphorus removal require secchi values of 20 cm or greater and good sunlight exposure. Seasonal factors may result in lower values.)

## What types of treatment systems are suitable for AquaMats®?

AquaMats® are recommended for aerated treatment lagoons at BOD<sub>5</sub> loads up to 200 mg/L. Commercial applications include municipal wastewater treatment, agricultural and animal industry wastewater control, industrial wastewater treatment and constructed wetlands for nutrient control in sensitive watershed areas. Contact your authorized AquaMats® Dealer for customer references.

## What are the recommended Application Rates?

Wastewater Input (000's gallons/day)

		100	250	500	750	1000
Required BOD <sub>5</sub> Removal per Day in mg/L	<b>10</b>	60	150	300	450	600
	<b>25</b>	150	375	750	1125	1500
	<b>50</b>	300	750	1500	2250	2000
	<b>100</b>	600	1500	3000	4500	6000
	<b>200</b>	1200	3000	6000	9000	12000

HRT minimum 2 days

HRT minimum 4 days

(Baseline values calculated for average water temperature of 20°C, pH range of 6.5 - 9.0, lagoon depth to 12.0 ft. and Dissolved Oxygen maintained at 2.0 ppm or higher. Hydraulic residence time may be significantly longer than minimums for conditions that require very high percentage removal performance.)

For design temperature conditions other than 20°C, multiply calculated number of AquaMats® by the appropriate factor below:

Design Temp °C	Factor
25	0.7
20	1.0
15	1.4
10	2.0
5	3.0

## How do acquisition costs, installation and maintenance compare with alternatives?

AquaMats® offer substantial acquisition cost advantages over rock and other low surface area media, often 40-50% the cost of less efficient alternatives. AquaMats® are easily installed in continuous lines by cable/wire inserted through the upper sleeve. Heavy

equipment or support structures are not required in most applications. AquaMats® surfaces are designed to be self-cleaning and require very modest annual maintenance.

**AquaMats® have been designed to offer substantial benefits in design, delivery and deployment!**

**Design Benefits:**

UltraWeave® Technology optimizes biological niche space to promote:

- Increased removal of BOD<sub>5</sub> and TSS
- Rapid phosphorus fixation/removal
- Reduction of excess minerals like copper & aluminum

**Delivery Benefits:**

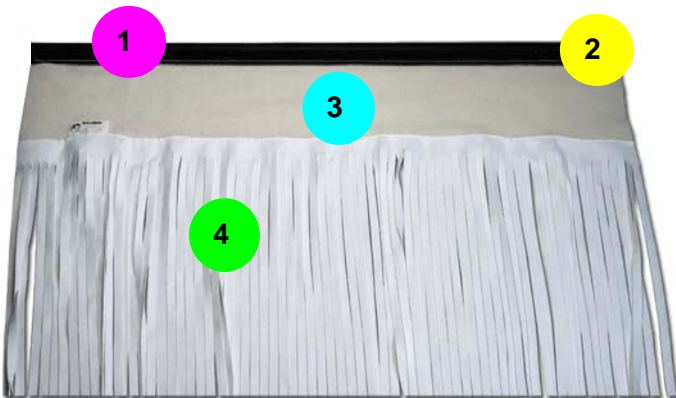
Surface Deployment Format (SDF) means that AquaMats® are:

- Easy to install and maintain
- Require NO power or housing
- Easily upscalable

**Deployment Benefits:**

AquaMats® can be used in new or existing systems to:

- Aid in effluent compliance
- Expand current system capacity cost efficiently
- Aid in reducing the loads on existing mechanical and biological filtration devices



**Key Product Components:**

1. Flotation Sleeve – Black coated woven polyethylene highly UV resistant (includes polyethylene float tube).
2. Float Sleeve Grommets - Stainless steel grommets at each end of units. Multi unit interconnection forms the AquaMat bioarrays.
3. Upper Biphasic Layer – Open fiber matrix maximizes particulate precipitation.
4. Lower Biphasic Layer – Constrained fiber matrix to provide microaerophilic space for maximum nitrogen cycle treatment.

Specifications	Model 15000	Model 15001	Model 15004	Model 15006
Width	72 inches (1.8 meters)	72 inches (1.8 meters)	72 inches (1.8 meters)	72 inches (1.8 meters)
Length	49 Inches (1.245 meters)	62 Inches (1.58 meters)	116 inches (3.0 meters)	195 inches (4.953 meters)
Nominal Surface Area	49 sq. ft. (4.552 sq. m.)	68 sq. ft. (6.32 sq. m.)	115.9 sq. ft. (10.78 sq. m.)	195 sq. ft. (18.12 sq. m.)
Effective Surface Area	5,016 sq. ft. (466 sq. m.)	6,674 sq. ft. (620 sq. m.)	13,060 sq. ft. (1,213 sq. m.)	23,640 sq. ft. (2,196 sq. m.)
Warranty	5+ years minimum	5+ years minimum	5+ years minimum	5+ years minimum
Sugg. List Price	\$124.99 each	\$159.99 each	\$299.99 each	\$424.99 each

AquaMats® for Biofiltration (SDF Model Nos. 15000, 15001, 15004 and 15006) are available!  
For more information, please contact:

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Prices and Availability subject to change without notice.

*AquaMats® for Biofiltration are manufactured under US Patents 6,060,153; 6,171,686; 6,230,654; 6,244,218 & Patents Pending Worldwide*

***DON'T DELAY... GET THE HIGH PERFORMANCE EDGE WITH AQUAMATS®!***