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Retention of *P. diminuta* by STER-O-TAP® MF cartridge

Test report ref. n°:	PMT 68		
On behalf of:	Prime Membrane Technologies N.V. & Prime Water Systems GmbH		
Customer order n°:	PMT/WO/LMT/4029/2003-02		
Cartridge ID	In-line membrane filter 32 mm od x 225 mm long containing 100 capillary micro-filtration membranes (0.15 µm– 1 mm o.d.)		
Beginning of test:	03/12/2003	Conclusion of test:	05/12/2003
Test organism:	<i>Pseudomonas (Brevundimonas) diminuta</i> (ATCC 19146)		

Objective of the test

The objective of the test is to determine the retention of *Pseudomonas (B) diminuta* in a new Ster-O-Tap® micro-filtration cartridge, fitted with capillary membranes with a cut off pore size of 0,15 µm and od of 1.0 mm, manufactured by PMT.

Test description

The Ster-O-Tap® in-line membrane cartridge was connected to the drinking water distribution system after an activated carbon filter (to eliminate traces of chlorine) and a pressure controller. The pressure drop across the membrane cartridge was 2 bar. The filter was first flushed with water without bacteria for 5 minutes. Then bacteria were injected during 5 minutes by means of a dosing pump into the inlet of the Ster-O-Tap® cartridge to a challenge of at least 5×10^5 cfu/ml. This was done 5 times, with a water flow without bacteria during 5 minutes between 2 cycles. A sample of 2000 ml was taken at the end of the flushing period and of the first and last cycle. The samples were further concentrated by membrane filtration and also plated on 869 agar. The cartridge was not sterilised prior to the test.

Test result Cartridge1

Concentration of *P. diminuta* in concentrated suspension: 1.2×10^9 cfu/ml

Flow rate through filter: 2.6 l/min

Water temperature: 16.7 °C

pH of water: 7.85

Water pressure at filter inlet: 2 bar, free outlet.

Sample point	Concentrated suspension: flow rate [ml/min]	Flow rate (ml/min)	Influent Concentration (calculated) [cfu/ml]	Effluent concentration [cfu/ml]	Log removal
During flushing	/	2600	/	<0.001	/
1 st cycle	2.09	2600	9.65×10^5	<0.001	>8.98
5 th cycle	2.02	400	6.06×10^6	<0.001	>9.78

Test result Cartridge2

Concentration of *P. diminuta* in concentrated suspension: 1.2×10^9 cfu/ml

Flow rate through filter: 3 l/min

Water temperature: 16.7 °C

pH of water: 7.85

Water pressure at filter inlet: 2 bar, free outlet.

Sample point	Concentrated suspension: flow rate [ml/min]	Flow rate (ml/min)	Influent concentration [cfu/ml]	Effluent concentration [cfu/ml]	Log removal
During flushing	/	3000	/	0.001	/
1 st cycle	2.03	3000	8.12×10^5	<0.001	>8.91
5 th cycle	2.02	620	3.91×10^6	<0.001	>9.59

Conclusion

A Ster-O-Tap[®] micro-filtration cartridge, fitted with capillary membranes with a cut off pore size of 0,15 µm and od of 1.0 mm, showed a log removal of >8.91 when challenged with *Pseudomonas (B) diminuta*.

Mol, December 08, 2003

Analyst in charge:

All results have been reviewed and approved by:

Ing. Sandra Van Roy



Dr. Ludo Diels,
Head of Expertise Centre
“Environmental Technology”

