

Bachema AG
Analytische Laboratorien

Schlieren, 21 July 2010
AR/CL

Katadyn Produkte AG
Birkenweg 4
8304 Wallisellen

Analytical report

Object: Reduction Test Katadyn Combi Filter black E

Bachema AG
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Chemisches und
mikrobiologisches
Labor für
die Prüfung von
Umweltproben
(Wasser,
Boden, Abfall)
Akkreditiert nach
ISO 17025/STS
Nr.064

Bachema order number	20103836
Sample number	19715-19720
Date of sampling	01 July 2010
Date of arrival at Bachema	01 July 2010
Place of sampling	Schlieren
Samples taken by	E. Belloni, Bachema AG Dr. A. Rust, Bachema AG
Customer	Katadyn Produkte AG, Birkenweg 4, 8304 Wallisellen
Invoice address	Katadyn Produkte AG, Birkenweg 4, 8304 Wallisellen
Report to	Katadyn Produkte AG, A. Walentin, Birkenweg 4, 8304 Wallisellen
Report copy by e-mail to	Katadyn Produkte AG, A. Walentin, alexander.walentin@katadyn.ch

Yours sincerely,
BACHEMA AG



Annette Rust
Dr. sc. nat. / Dipl. Natw. ETH

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Overview over the samples

Bachema number	Sample description	Sampling / Arrival
19715 W	Test suspension R. terrigena	01.07.10 / 01.07.10
19716 W	Filtrate of suspension R. terrigena	01.07.10 / 01.07.10
19717 W	Test suspension E. coli	01.07.10 / 01.07.10
19718 W	Filtrate of suspension E. coli	01.07.10 / 01.07.10
19719 W	Test suspension Salmonella	01.07.10 / 01.07.10
19720 W	Filtrate of suspension R. terrigena	01.07.10 / 01.07.10

Abbreviation

n.d.	Not detected
cfu	Colony forming units
W	Water sample
F	Solid sample
dw	dry weight
<	For the results, the value after the sign < (smaller than) indicates the limit of quantification for the corresponding method.
*	Parameters marked with a * are not within of the accredited area of Bachema AG or are external analysis.

Accreditation

 <p>S SCHWEIZERISCHER PRÜFSTELLENDIENST T SERVICE SUISSE D'ESSAI T SERVIZIO DI PROVA IN SVIZZERA S SWISS TESTING SERVICE, STS-#: 064</p>	Partially copying of the analytical report is only allowed with permission from Bachema AG.
 <p>Association of Swiss Laboratories Verband Schweizer Laboratorien Association des Laboratoires Suisses Associazione dei Laboratori Svizzeri</p>	Detailed information on analytical methods, precision of the measurement and further data are available on request (see also www.bachema.ch).

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Sample description

Sample number
Date of sampling

Test suspension <i>R. terrigena</i>	Filtrate of suspension <i>R. terrigena</i>	Test suspension <i>E. coli</i>	Filtrate of suspension <i>E. coli</i>		
19715 01.07.10	19716 01.07.10	19717 01.07.10	19718 01.07.10		

Microbiological parameters

Coliforms	cfu/100 mL	30000000	n.d.		
<i>Escherichia coli</i>	cfu/100 mL		63000000	n.d.	
Salmonella	cfu/mL				

Sample description

Sample number
Date of sampling

Test suspension <i>Salmonella</i>	Filtrate of suspension <i>R. terrigena</i>				
19719 01.07.10	19720 01.07.10				

Microbiological parameters

Coliforms	cfu/100 mL				
<i>Escherichia coli</i>	cfu/100 mL	3200000	n.d.		
Salmonella	cfu/mL				

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Experimentation and results

Test-suspensions

The test water was pristine tap water that is available at Bachema AG, Schlieren, Switzerland. Before use it was rinsed until it came out with the temperature of 16.8 °C.

For each test bacterium strain a separate test suspension was produced. As example for the group of coliform bacteria *Raoultella terrigena* ATCC 33257 was used (earlier name of this species was: *Klebsiella terrigena*). For *Escherichia coli* strain *E. coli* ATCC 25922 and for Salmonella strain *S. typhimurium* ATCC 14028 was used. The reference test strains were grown over night at 37°C in TSB. For the test suspension they were suspended in the tap water. The test suspension was permanently stirred during all filtration experiments.

Preparation of the filter units and filtration procedure

The filter was set up according to user's instructions. The cartridge was filled with activated carbon and the filter flushed with 20 pump strokes of pristine tap water. After this, the ceramic was cleaned from carbon filter dust according to the user's instructions.

During filtration of the bacterial suspension 1 liter were discarded and each time approximately 250 mL of the filtrate were filled into sterile glass bottles for bacterial analysis.

Microbiological analyses of the water samples

Coliforms and *Escherichia coli* were quantified with the membrane filtration method and cultivation on selective, chromogenic nutrient plates. Salmonella were quantified with the most probable number (MPN) method.

Results and reduction rates

The concentrations of the test suspensions and filtrates as well as the calculated reduction rates can be referred in table 1.

Table 1: Concentrations of test bacteria in the water samples and reduction rates

Sample no.	Sample description	Coliforms [cfu/100 mL]	Escherichia coli [cfu/100 mL]	Salmonella [cfu/ mL]	Reduction rate	Reduktion rate [%]
19715	Test suspension R. terrigena	30000000			<i>Raoultella terrigena</i>	
19716	Filtrate of suspension R. terrigena	n.d.			3.333E-08	99.99999667
19717	Test suspension E. coli		63000000		<i>Escherichia coli</i>	
19718	Filtrate of suspension E. coli		n.d.		1.587E-08	99.99999841
19719	Test suspension Salmonella			3200000	Salmonella	
19720	Filtrate of suspension Salmonella			n.d.	3.125E-07	99.99996875

Schlieren, 21. July 2010