



Client: Aalto Filtration Oy
Kanslerinkatu 14
33720 Tampere

Samples: 6 NEROX Drinking Water Filters

Test requested: Filtering efficiency of NEROX Drinking
Water Filter for metals, pesticides and
microbes

Procedure:

The tap water of the city of Espoo was allowed to run through the filter continuously for four days. On second and fourth day of the experiment the tap water was replaced for a certain period of time by a test solution and the filtering efficiency was measured. Microbiological tests were carried out after 1 hour and 2 days, respectively.

Results

Metals

The results are expressed as filtering efficiency in %.

METAL	TEST SOLUTION, concentration	4 days
iron Fe	2 mg/l	100 %
lead Pb	0,1 mg/l	94 %
copper Cu	10 mg/l	63 %
aluminium Al	2 mg/l	95 %

The pH of the test solution was adjusted at 7.



The metals were determined with graphite furnace atomic absorption technique as specified in standard methods SFS 5074 and SFS 5502.

Pesticides

The results are expressed as filtering efficiency in %.

PESTICIDE	TEST SOLUTION, concentration	2 days	4 days
Aldrin	10 ug/l	72 %	72 %
Lindan	10 ug/l	100 %	100 %
p,p-DDE	10 ug/l	100 %	100 %
p,p-DDD	10 ug/l	100 %	100 %
p,p-DDT	10 ug/l	75 %	90 %
MCPA	100 ug/l	70 %	
Dichlor- prop	100 ug/l	55 %	
Mecoprop	100 ug/l	30 %	
2,4-D	100 ug/l	90 %	

Method

1) aldrin, lindan, p,p-DDE, p,p-DDD, p,p-DDT

The pesticides were extracted from a 500 ml sample with hexan/dichloromethane (1:1), the extract was dried with Na₂SO₄, concentrated and analyzed with gas chromatograph.



2) MCPA, dichlorprop, mecoprop, 2,4-D

500 ml water sample was acidified and extracted as above. After concentration the sample was hydrolyzed by boiling with 0.1 M NaOH. The hydrolysis product was transferred in to diethylether and derivatized with diatsomethane. The analysis was carried out by gas chromatograph/mass spectrometer. These compounds were tested only once, 2 days after beginning of the experiment.

Microbes

Test solution contained the following micro-organisms:

Citrobacter freundii
Clostridium perfringens
Escherichia coli
Micrococcus luteus
Salmonella dublin
Staphylococcus aureus

In the enumeration of coliform bacteria and fecal coliform bacteria 100 ml and salmonella 250 ml of filtered water was used, respectively.

The results are expressed as the number of colony forming units in the sample volume under investigation.

The total number of aerobic micro-organisms in test solution (1) was 100 000/ml and in test solution (2) 390 000/ml.

TEST MICROBES	TEST SOLUTION, concentration	2 h	2 days
Coliforms	2 400 (1) 12 000 (2)	0/100 ml	0/100 ml
Fecal coliforms	240 (1) 2 400 (2)	0/100 ml	0/100 ml
Salmonella dublin	positiv	0/250 ml	0/250 ml



Methods:

aerobic microbes	SFS 4112
coliforms	SFS 3016
fecal coliforms	SFS 4088
Salmonella	American Public Health Association Compendium of methods for the microbiological examination of foods 3 rd edition

According to the test results all bacteria and other protists like algae, fungi and protozoa whose width and length is $> 0.5 \mu\text{m}$ will be filtered out with this filter.



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