STÉFANI DECHLORINATING STERILIZING CARTRIDGE

TECHNICAL INFORMATION

1. GENERAL INFORMATION

1.1. Product name: Stéfani Ceramic Water Filtering Element (Cartridge)

1.2. Product code: AE2702000101

1.3. Barcode: 7896877440123

1.4. Harmonized System code: 6912.00.00

1.5. Manufacturer: Cerâmica Stéfani S.A., Brazil

1.6. Function: improves water quality by a purifying process divided in three stages: filtration, sterilization and dechlorination

1.7. Application: gravity or pressure water purifying devices

1.8. Service life: the product can provide up to 500 liters of purified water in conditions according to those attested by this report

1.9. Flow rate: the product provides an average flow of 1,2 liter of purified water per hour, which is equivalent to around 29 liter a day. The flow rate depends directly on the pressure of water column and on the quality of the water to be filtered

2. COMPOSITION: kaolin, phyllite, PVC compounds, thermoplastic resins, activated carbon and colloidal silver

3. WEIGHT PER UNIT

3.1. Net Weight: 0,237 kg (+/- 5 %)

3.2. Gross Weight: 0,225 kg (+/- 5 %)

4. PACKAGING: cartons with 30 or 60 pieces each

4.1. 30 piece carton:

4.1.1. Weight: 7,2 kg

4.1.2. Measures (length x width x height): 33,5 cm x 33,5 cm x 20,5 cm

4.2. 60 piece carton:

4.2.1. Weight: 14,5 kg

4.2.2. Measures (length x width x height): 33,5 cm x 33,5 cm x 41,0 cm

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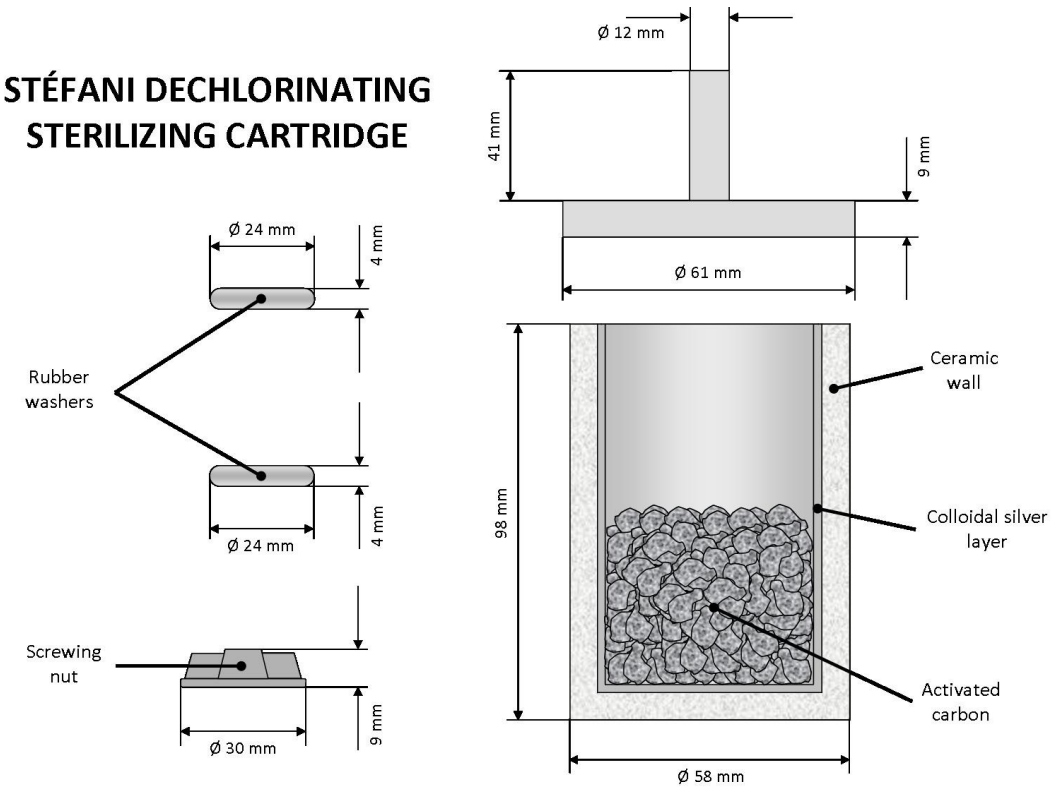
5. PRODUCT DIMENSIONS (MOUNTED PRODUCT)

5.1. Superior diameter: 58 mm

5.2. Inferior diameter (plastic mount): 61 mm

5.3. Height: 141 mm



6. HOW DOES THE WATER FILTRATION WORK?

The water purification is made in three distinct stages: 1. Filtration; 2. Sterilization and; 3. Dechlorination.

NOTICE: in addition to the Dechlorinating Sterilizing cartridge, there are also available the Traditional cartridge, which has only the ceramic wall, performing only the filtration of the water, and the dechlorinating cartridge, which, besides the ceramic wall, contains activated carbon, performing filtration and dechlorination of the water. However, none of these two cartridges contain colloidal silver, thus, none of them sterilize water.

6.1. Filtration

The ceramic wall has millions of microscopic pores that can hold particles of up to 0,5 microns (1.000 times smaller than a sand grain). Utilizing gravity force, this wall offers a desirable and appropriate

resistance to the water passage, resulting in a drop by drop water filtration process. The effectiveness of this process can be attested by the Particle Retention Efficiency Variation report issued by Ecolabor Comercial, Consultoria e Análises Ltda..

Canal (µm)	Retention 1º Collection	Retention 2º Collection	Average
0,8-1,0	87,1 %	90,1 %	88,6 %
1,0-5,0	97,2 %	98,0 %	97,6 %
5,0-15,0	99,0 %	99,5 %	99,2 %

Period of tests: January 28th, 2008 to January 31st, 2008
Methodology: the applied methodology was based on Attachment A of norm ABNT/NBR 15176 – "Domestic Water Quality Improvement Device – Gravity Device"

6.2. Sterilization

The microporous ceramic wall receives a colloidal silver shower on the inside creating a layer that sterilizes water on contact.

Colloidal silver is effective against a vast number of pathogens, making it much more efficient than a broad-spectrum antibiotic. Many strains of pathogenic microbes, viruses, fungi, bacteria or any other single-celled pathogen resistant to other antibiotics are killed in contact with colloidal silver and are unable to mutate.

The effectiveness of the Stéfani Dechlorinating Sterilizing Ceramic Cartridge can be attested by the results of the microbiological analysis issued by the Falcão Bauer Institute (Technological Center for Quality Control) on September 2005.

Microbiological efficiency

Parameters	Obtained Results	NBR 15176 Specifications
Initial microbiological level control	< than the initial exposure concentration	≤ than the initial exposure concentration, with tolerance of additional 10 %
Final microbiological level control	< than the final exposure concentration	≤ than the final exposure concentration, with tolerance of additional 10 %

Period of tests: June 20th, 2005 to September 19th, 2005.
Methodology: 20 Ed. Standart Methods for the Examination of Water and Wastewater; ABNT/NBR 15176:2004 (Water quality improvement device for domestic use – Gravity device)

On the other hand, the bacteriological efficiency of the Stéfani Dechlorinating Sterilizing Ceramic Cartridge can be verified in the results of the analysis issued by Ecolabor.

Bacteriological efficiency

Bacteriological efficiency at the beginning of the service life	
Initial concentration result in UFC/100 ml	1,00 x 10e5
Final concentration result in UFC/100 ml	< 1,00 x 10e0
Bacteriological efficiency at 95 % of service life	
Initial concentration result in UFC/100 ml	4,10 x 10e5
Final concentration result in UFC/100 ml	8,00 x 10e2

Date of entrance at the laboratory: April, 8th, 2011
Date of issuing of the test report: June 3rd, 2011
Methodology: 20 Ed. Standart Methods for the Examination of Water and Wastewater; ABNT/NBR 15176:2004 (Water quality improvement device for domestic use – Gravity device)

6.3. Dechlorination

The Stéfani Dechlorinating Sterilizing Cartridge is filled with a granular activated carbon. 450 grams of carbon contains a contact surface of roughly 0,5 square kilometers and can absorb literally thousands of different chemicals.

The two most important factors affecting the efficiency of activated carbon filtration are the amount of carbon and the amount of time the contaminant stays in contact with it. The more carbon the better. Similarly, the lower the flow rate of the water, the more time that contaminants will be in contact with the carbon and the more absorption there will be. Particle size also affects removal rates.

There are two main mechanisms by which activated carbon remove contaminants from water: absorption and catalytic reduction, a process involving the attraction of negatively-charged contaminant ions to the positively-charged activated carbon. Organic compounds are removed by absorption and residual disinfectants such as chlorine and chloramines are removed by catalytic reduction.

Activated carbon filtration is very common in a number of home water treatment systems. It can be used as a standalone filter to reduce or eliminate bad tastes and odors, chlorine, and many organic contaminants in public (pre-treated or chlorinated) water supplies to produce a significantly improved drinking water.

The quality of the dechlorinating sterilizing cartridge can be attested by the results obtained in the Determination of Extractions issued by Ecolabor, showing that water is not contaminated by the cartridge according to the parameters below.

Determination of extractions

Parameters	Obtained Results	NBR 15176 Specifications
Aluminum (Al)	0,183mg/L	0,2 mg/L
Ammonia (NH3)	0,0038mg/L	1,5mg/L
Cadmium (Cd)	Not detected	0,005mg/L
Lead (Pb)	Not detected	0,01mg/L
Chloride (Cl)	Not detected	250mg/L
Copper (Cu)	0,0058mg/L	2mg/L
Aparent Color	Not detected	15uH
Total Chrome (Cr)	0,003mg/L	0,05mg/L
Hardness (CaCO3)	26mg/L	500mg/L
Etilbenzene	Not detected	0,2mg/L
Iron (Fe)	Not detected	0,3mg/L
Manganese (Mn)	Not detected	0,1mg/L
Monochlorobenzene	Not detected	0,12mg/L
Silver (Ag)	0,0162mg/L	0,05mg/L
Sodium (Na)	Not detected	200mg/L
Total dissolved solids	48mg/L	1000mg/L
Sulphate (SO4)	Not detected	250mg/L
Hydrogen Sulphate (H2S)	Not detected	0,05mg/L
Surfactants (LAS)	Not detected	0,5mg/L
Toluene	Not detected	0,17mg/L
Turbidity	Not detected	5,0 UT
Xylene	Not detected	0,3mg/L
Zinc (Zn)	Not detected	5mg/L

Date of entrance at the laboratory: September 21st, 2011
Date of issuing of the test report: February 2nd, 2011

The effectiveness of the activated carbon can be verified in the Free Chlorine Reduction Efficiency Test issued by the Falcão Bauer Institute (Technological Center for Quality Control).

Free chlorine reduction efficiency

Parameters	Obtained Results	NBR 15176 Specifications
Free Chlorine Reduction efficiency	(C) I – 96,1 %	(C) I; (C) II; (C) III

(C) I: ≥ 75 %; (C) II: 50 to 74,9 %; (C) III: 25 to 49,9 %
Period of Tests: June 20th, 2005 to September 19th 2005
Methodology applied: 20 Ed. Standart Methods for the Examination of Water and Wastewater; ABNT/NBR 15176:2004 (Water quality improvement device for domestic use – Gravity device)

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