



**Jim Doyle, Governor**  
**Cory L. Nettles, Secretary**

June 10, 2004

FILBUR MANUFACTURING  
GARY BURKITT, PRESIDENT  
2400 S GARNSEY ST  
SANTA ANA CA 92707

GENERAL ELECTRIC COMPANY  
CONSUMER INDUSTRIAL  
JEFF BORDEN  
AP35-112  
LOUISVILLE KY 40225

Re: Description: WATER TREATMENT DEVICE-REVERSE OSMOSIS  
Manufacturer: GENERAL ELECTRIC COMPANY  
Product Name: SMARTWATER  
Model Number(s): GXRM10G  
Product File No: 20040251

The specifications and/or plans for this plumbing product have been reviewed and determined to be in compliance with chapters Comm 82 through 84, Wisconsin Administrative Code, and Chapters 145 and 160, Wisconsin Statutes.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wisconsin Administrative Code. This approval is valid until the end of June 2009.

This approval is contingent upon compliance with the following stipulation(s):

- This product has undergone sufficient testing to document the product's ability to reduce only those contaminants and/or substances as specified in this approval letter when the product is installed and maintained in strict accordance with the manufacturers published instructions.
- For buildings not served by a municipal water supply, Department of Natural Resources (DNR) written approval may be required prior to installation of this product in a water supply system to reduce the concentration of a contaminant that exceeds the primary drinking water standards contained in ch. NR 809, Wis. Admin. Code, the enforcement standards contained in ch. NR 140, Wis. Admin. Code, or for a water supply system that is subject to a written advisory opinion by the DNR. For more information contact the DNR Section of Private Water Systems, P.O. Box 7921, Madison, WI 53707, telephone (608) 266-3415.
- If this approved device is modified or additional assertions of function or performance are made, then this approval shall be considered null and void, unless the change is submitted to the department for review and the approval is reaffirmed.
- The system shall be provided with an in-line total dissolved solids (TDS) monitor, or other acceptable means, to warn the user when the system is not performing it's functions. Acceptable alternatives to an in-line TDS monitor include:
  1. terminating the discharge of treated water;
  2. sounding an alarm which is connected to acceptable power source;
  3. flashing a light connected to an acceptable power source;
  4. providing the user with an obvious, readily interpretable, indication of the system's ability to perform (e.g. decreasing the flow rate of treated water by 50% or more for systems making mechanical filtration claims;
  5. Providing a sampling service by the manufacturer, either directly or through an authorized dealer, a minimum of once every six months;

6. Providing a sampling kit for analysis of TDS or other appropriate contaminants; or
7. Providing a TDS monitor to measure the product water quality.

Whichever means of performance verification is selected, it shall be clearly described in the owner's manual for this device, and approved for use along with the device.

Based on testing data submitted to and reviewed by the department, this approval recognizes that this plumbing product will reduce the concentration of contaminants as specified on pages 1 through 4 of this letter.

**AESTHETIC CONTAMINANT REDUCTION CAPABILITIES**  
**PRODUCT FILE NUMBER 20040251**  
**TABLE 1 OF 3**

**Daily Production Rate:** 37.9 liters per day (lpd) [10.0 gallons per day (gpd)]

Tested Contaminant	Average Influent Challenge (mg/l) <sup>1</sup>
Ammonium(NH <sub>4</sub> <sup>+</sup> )	0.85
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	289
Bromide (Br <sup>-</sup> )	1.6
Chloride (Cl <sup>-</sup> )	738
Magnesium (Mg <sup>+2</sup> )	26.1
Nickel	0.43
Sodium (Na <sup>+</sup> )	502
Sulfate (SO <sub>4</sub> <sup>-2</sup> )	655
Tannin (C <sub>76</sub> H <sub>52</sub> O <sub>4</sub> )	2.1
Total Dissolved Solids (NaCl surrogate)	750 ± 40
Zinc (Zn <sup>+2</sup> )	13.5

**Other Conditions:** the contaminant reduction performance capabilities displayed for Table 1 of 3 were verified by testing conducted in accordance with the testing *methodology* contained in NSF *International* Standard 58. To qualify for total dissolved solids (TDS) reduction, the device must reduce the influent challenge concentrations by ≥ 75%. The other contaminants displayed for Table 1 of 3 are not covered under NSF Standard 58; for ammonium the average effluent concentration was 0.03 mg/l (96.4% reduction), for bicarbonate the average effluent concentration was 20.2 mg/l (92.9% reduction), for bromide the average effluent concentration was 1.2 mg/l (92.6% reduction), for chloride that average effluent concentration was 48.5 mg/l (93.4% reduction), for magnesium the average effluent concentration was 0.01 mg/l (99.9% reduction), for nickel the average effluent concentration was 0.001 (99.7% reduction), for sodium the average effluent concentration was 35.9 mg/l (92.8% reduction), for sulfate the average effluent concentration was 5.5 mg/l (99.1% reduction), for tannin the average effluent concentration was 0.02 mg/l (99.0% reduction) and for zinc the average effluent concentration was 19.3 (98.5% reduction).

1 = milligrams per liter (mg/l) are equivalent to parts per million (ppm)  
 ≥ = greater than or equal to  
 < = less than  
 ± = plus or minus

**HEALTH EFFECTING BIOLOGICAL CONTAMINANT REDUCTION CAPABILITIES  
 PRODUCT FILE NUMBER 20040251  
 TABLE 2 OF 3**

**Daily Production Rate:** 37.9 liters per day (lpd) [10.0 gallons per day (gpd)]  
**Capacity:** dependent on the type and quantity of particulate matter present in the untreated water; the need for maintenance may be indicated by a significant decrease in flow rate.

Tested Contaminant	Influent Challenge (#/ml)
Cysts/Oocysts <sup>1</sup>	≥ 5.0 x 10 <sup>4</sup>

**Other Conditions:** the contaminant reduction performance capabilities displayed for Table 2 of 3 were verified by testing conducted in accordance with the testing *methodology* contained in NSF *International* Standard 58. To qualify for cyst/oocyst reduction, the device must reduce the influent challenge concentrations by ≥ 99.95% at each sample point.

#/ml = particles per milliliter

<sup>1</sup> = the specific organisms covered under this testing protocol include cryptosporidium parvum, entamoeba histolytica, giardia lamblia and toxoplasma gondii

≥ = greater than or equal to

**HEALTH EFFECTING INORGANIC CONTAMINANT REDUCTION CAPABILITIES  
 PRODUCT FILE NUMBER 20040251  
 TABLE 3 OF 3**

**Daily Production Rate:** 37.9 Lpd (10.0 gpd)

Tested Contaminant	Influent Challenge (mg/l) <sup>1</sup>
Arsenic (As <sup>+5</sup> )	0.30 ± 10%
Barium (Ba <sup>+2</sup> )	10.0 ± 10%
Cadmium (Cd <sup>+2</sup> )	0.030 ± 10%
Hexavalent Chromium (Cr <sup>+6</sup> )	0.3 ± 10%
Trivalent Chromium (Cr <sup>+3</sup> )	0.3 ± 10%
Copper (Cu <sup>+2</sup> )	3.0 ± 10%
Fluoride (F <sup>-1</sup> )	8.0 ± 10%
Lead (Pb <sup>+2</sup> )	0.15 ± 10%
Mercury (Hg <sup>+2</sup> )	0.006 ± 10%
Nickel (Ni <sup>+2</sup> )	0.30 ± 10%
Nitrate (NO <sub>3</sub> <sup>-</sup> as N)	30.0 ± 10%
Selenium (Se <sup>+4</sup> and Se <sup>+6</sup> )	0.10 ± 10%

**Other Conditions:** the contaminant reduction performance capabilities displayed for Table 2 of 3 were verified by testing conducted in accordance with the testing *methodology* contained in NSF *International* Standard 58. To qualify for arsenic reduction, the device must reduce the influent challenge concentrations such that all effluent concentrations are ≤ 0.010 mg/l. To qualify for barium reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 2.0 mg/l. To qualify for cadmium reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.005 mg/l. To qualify for chromium (hexavalent and/or trivalent) reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.10 mg/l. To qualify for copper reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 1.3 mg/l. To qualify for fluoride reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 1.5 mg/l. To qualify for lead reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.010 mg/l. To qualify for mercury reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.002 mg/l. To qualify for nickel reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.1 mg/l. To qualify for nitrate reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 10.0 mg/l (as N). To qualify for selenium reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.05 mg/l.

<sup>1</sup> = mg/l are equivalent to parts per million (ppm)

≤ = less than or equal to

± = plus or minus

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This device was tested under controlled laboratory, or field, conditions. The actual performance of this device for a specific end use installation will vary from the tested conditions based on local factors such as water pressure, water temperature and water chemistry.

The department is in no way endorsing this product or any advertising, and is not responsible for any situation that may result from its use.

Sincerely,

Glen W. Schlueter  
Engineering Consultant-Plumbing Product Reviewer  
Bureau of Integrated Services  
Safety and Buildings Division  
Department of Commerce  
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GWS:gws