



November 10, 2016

ECOWATER SYSTEMS LLC  
MARGARET BICKING  
1890 WOODLANE DR  
WOODBURY MN 55125

Re: Description: WATER TREATMENT DEVICE - EFFICIENCY RATED POE WATER SOFTENER  
Manufacturer: ECOWATER SYSTEMS LLC  
Product Name: (trans id 2788734) ECOWATER  
Model Number(s): ERR 3502R30 AND ERR3702R30  
Product File No: 20160273

The specifications and/or plans for this plumbing product have been reviewed and determined to be in compliance with chapters SPS 382 through 384, 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 November 2017.

This approval supersedes the approval issued on November 13, under product file number 20120357.

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 manufacturer's published instructions.
- Where the Department of Natural Resources (DNR) has jurisdiction, a 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) 267-9787.
- If these approved devices are 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.
- These cation exchange water softeners shall be sized, installed, programmed and maintained such that wastewater volumes, total dissolved solids and chloride discharges are minimized.
- At the time of installation, these devices shall be provided with an effective means to warn the users when they are not performing their function. This shall be accomplished by one of the following:
  1. sounding and alarm or flashing a light, each connected to an acceptable power source;
  2. providing a sampling kit for analysis of hardness or other appropriate contaminants; or
  3. providing a hardness monitor.

- Operation of these devices at flow rates above the rated service flow rates specified within this approval letter are not supported or acknowledged by this approval. The rated service flow rates are the actual flow rates at which these devices were tested.

Because the level of treatment obtained is, in part, a function of how long the water is in contact with the media within these devices, arbitrary increases in the service flow rates above the rated service flow rates may compromise the quality of treated water.

- The department does not recommend the use of water softeners for reducing dissolved iron concentrations in excess of 3.0 mg/l. This is because applying water softeners in this way sacrifices long-term water softener performance and efficiency. The use of water softeners for reducing dissolved iron concentrations exceeding 3.0 mg/l also generates excessive, and otherwise avoidable, quantities of chloride and dissolved solids which are subsequently discharged to ground and/or surface water supplies. Once present in ground and/or surface water supplies, chloride and dissolved solids tend to remain in the water resource and may travel great distances from the original point source. Presently, there are no economically viable methods to remove chloride and dissolved solids from water supplies because available technologies generate waste streams of their own, further concentrating the problem. It has been established by the Wisconsin Department of Natural Resources that chloride is chronically toxic to representative aquatic organisms, including forage and sport fish, at 395 mg/l, and acutely toxic at 757 mg/l.
- These devices are not approved for the reduction of bacterial, colloidal or organically bound forms of iron.

The water must be tested to speciate the iron present to determine if these devices can provide adequate treatment.

Based on testing data submitted to and reviewed by the department, this approval recognizes that these plumbing products will reduce the concentration of contaminants as specified on pages 1 through 3 of this letter.

**WATER SOFTENING CAPABILITIES  
 PRODUCT FILE NUMBER 20160273  
 TABLE 1 OF 2**

Model Numbers	Capacity*						Flow Rate vs. Pressure Loss
	Rating 1		Rating 2		Rating 3		
Metered	Grains	Pounds	Grains	Pounds	Grains	Pounds	gpm @ psig
ERR3502R30	7,700	1.7	21,600	6.5	27,500	11.0	8.0 @ 8.0
ERR3702R30	8,300	1.6	25,000	6.4	30,200	11.3	11.0 @ 8.0

**\*Other Conditions:** The softener capacity rating is based on grains of hardness, due to calcium and magnesium cations, removed (as calcium carbonate) while producing soft water between successive regenerations and is related to the pounds of salt required for each regeneration. The tests run to generate the data for table 1 of 2 were conducted in accordance with NSF Standard 44 and performed by the Water Quality Association (WQA). This device is also approved for the reduction of up to 12.0 mg/l dissolved iron; the testing/rationale to support the dissolved iron reduction claim was provided by the national *Water Quality Association* in Lisle, IL.

This device is efficiency rated (ER) at the lowest salt dosages displayed (i.e. "Rating 1").

NSF Standard 44 also makes a provision, for water softeners containing 100% sulfonated polystyrene di-vinyl benzene cation exchange media, for barium and radium reduction claims based on successfully meeting the standards' hardness reduction capacity testing requirements. Hardness is an acceptable surrogate for barium and radium because studies conducted on sulfonated polystyrene di-vinyl benzene cation exchange media have documented that if hardness is reduced to less than 1.0 grain per gallon (1 grain per gallon = 17.1 mg/l), then barium and radium will also be effectively reduced. The influent barium concentration must not exceed 10 mg/l, and the influent radium concentration must not exceed 25 pCi/l.

**TABLE 2 OF 2**  
**PRODUCT FILE NUMBER 20160273**  
**AESTHETICS EFFECTING CONTAMINANT REDUCTION CAPABILITIES**

**Flow Rates:** ERR3502R30 = 8.0 gpm @ 8.0 psig  
ERR3702R30 = 11.0 gpm @ 8.0 psig

**Capacity:** 912,000 gals.

Tested Contaminant	Influent Challenge Level (mg/l)
Chlorine (free)	2.0 ± 0.2

**Other conditions:** the contaminant reduction performance data displayed for table 2 of 2 was generated by testing conducted in accordance with NSF *International Standard 42*. To qualify for free chlorine reduction, the device must reduce the influent challenge concentrations by  $\geq 50\%$ ; meeting the free chlorine reduction requirements also qualifies the device for the reduction of aesthetic, organic, taste and odor reduction (e.g. geosmin, methylisoborneol); this does not include hydrogen sulfide.

mg/l = milligrams per liter are equivalent to parts per million (ppm)  
 $\geq$  = greater than or equal to

± = plus or minus

This device contains activated carbon (AC). Activated carbon has a finite capacity and does not respond to salt based regeneration. A given water supply may contain substances, in addition to free chlorine (FAC), which will decrease the adsorptive capacity of the AC component.

Disinfection of water softeners by adding bleach (FAC) to the brine well is a common practice that should be avoided on this device unless absolutely necessary. The high concentration of free chlorine within the softener, while temporary, will decrease the adsorptive capacity of the AC substantially.

The treatment capabilities of the AC may be depleted prior to the end of the softener's expected lifetime.

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 which may result from its use.

Sincerely,

Glen W. Schlueter  
Environmental Engineer - Plumbing Product Reviewer  
Department of Safety and Professional Services  
Division of Industry Services  
Bureau of Technical Services  
(608) 267-1401 Phone  
(608) 267-9723 Fax  
glen.schlueter@wi.gov E-mail