



December 5, 2011

REVISED COPY

AQUION INCORPORATED
RAINSOFT
YE LIU
2080 E. LUNT
ELK GROVE VILLAGE IL 60007

Re: Description: WATER TREATMENT DEVICE - POU REVERSE OSMOSIS
Manufacturer: AQUION INCORPORATED
Product Name: ULTREFINER II
Model Number(s): ULTREFINER II-FMV
Product File No: 20110311

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 December 2016.

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 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.
- In addition to the product water quality monitor specified elsewhere in this letter, this device shall be provided with one of the following means to warn the user when the system is not performing its function:
 1. a nitrate/nitrite monitor on the product water stream; or
 2. a sampling and analysis kit for nitrate/nitrite with explicit instructions of recommended frequency of analysis.

- 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 its 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.

- These devices will only reduce the concentration of volatile organic chemicals at water outlets that are served by the devices. There are dermal (skin) absorption and inhalation exposure risks associated with volatile organic chemicals. Therefore, using point-of-use devices such as these will not protect all routes of potential exposure. Potentially hazardous exposures to volatile organic chemicals will remain possible at unprotected outlets, particularly hot water outlets (e.g. bathing, showering, clothes washing or dish washing).

If, by way of reputable water analyses, a water supply is known to contain unsafe levels of volatile organic chemicals, then all the water entering the residence must be treated at the point-of-entry using an approved water treatment device to address all potential routes of exposure.

- These devices will only reduce the concentration of cysts/oocysts at water outlets that are served by the devices. Therefore, using point-of-use devices such as these will not protect all routes of potential exposure. Potentially hazardous exposures to cysts/oocysts will remain possible at unprotected outlets.

The presence of cysts/oocysts strongly suggests that other pathogens (e.g. bacteria, virus) may also be present.

If, by way of reputable water analyses, a water supply is known to contain cysts/oocysts, then all the water entering the residence must be treated at the point-of-entry, using an approved water treatment device, to address all potential routes of exposure thereby providing a biologically safe water supply.

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 6 of this letter.

**HEALTH EFFECTING INORGANIC CONTAMINANT REDUCTION CAPABILITIES
 PRODUCT FILE NUMBER 20110311
 TABLE 1 OF 4**

Production Rate: 60.6 liters per day (lpd) [16.02 gallons per day (gpd)]

Tested Contaminant	Influent Challenge (mg/l) ¹
Arsenic (As ⁺⁵)	0.30 ± 10%
Barium (Ba ⁺²)	10.0 ± 10%
Cadmium (Cd ⁺²)	0.03 ± 10%
Hexavalent Chromium (Cr ⁺⁶)	0.15 ± 10%
Trivalent Chromium (Cr ⁺³)	0.15 ± 10%
Copper (Cu ⁺²)	3.0 ± 10%
Fluoride (F ⁻¹)	8.0 ± 10%
Lead (Pb ⁺²)	0.15 ± 10%
Nitrate (NO ₃ ⁻)	27.0 ± 10%
Nitrite (NO ₂ ⁻)	3.0 ± 10%
Radium 226/228 (Barium surrogate) ³	25 pCi/l
Selenium (Se ⁺⁴ and Se ⁺⁶)	0.10 ± 10%

Other Conditions: the contaminant reduction performance capabilities displayed for Table 1 of 4 were verified by testing conducted in accordance with NSF *International* Standard 58. To qualify for pentavalent arsenic reduction, the device must reduce then 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 ≤ 0.05 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 ≤ 0.015 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 Nitrite reduction, the device must reduce the influent challenge water concentrations so that all effluent concentrations are ≤ 1.0 mg/l (as N). To qualify for Radium reduction, the device must reduce the influent Barium challenge concentrations so that all effluent concentrations are ≤ 2.0 mg/l. To qualify for Selenium reduction, the device must reduce the influent challenge concentrations so that all effluent concentrations are ≤ 0.05 mg/l.

* = unless otherwise specified

± = plus or minus

pCi/l = picocuries per liter

≤ = less than or equal to

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

³ = barium is used as a surrogate based on its relationship with radium on the periodic table and the difficulty in using radium for routine testing.

**HEALTH EFFECTING ORGANIC CONTAMINANT REDUCTION CAPABILITIES
 PRODUCT FILE NUMBER 20110311
 TABLE 2 OF 4**

Production Rate: 60.6 liters per day (lpd) [16.02 gallons per day (gpd)]
Capacity: 851.7 l (liters) [225 gallons (gals.)]

Tested Contaminant	Influent Challenge (µg/L)¹
Alachlor	50
Atrazine	100
Benzene	81
Carbofuran	190
Carbon tetrachloride	78
Chlorobenzene	77
Chloropicrin	15
2,4-D	110
Dibromochloropropane (DBCP)	52
o-Dichlorobenzene	80
p-Dichlorobenzene	40
1,2-Dichloroethane	88
1,1-Dichloroethylene	83
cis-1,2-Dichloroethylene	170
trans-1,2-Dichloroethylene	86
1,2-Dichloropropane	80
cis-1,3-Dichloropropylene	79
Dinoseb	170
Endrin	53
Ethylbenzene	88
Ethylene dibromide (EDB)	44
Haloacetonitriles (HAN):	-
Bromochloroacetonitrile	22
Dibromoacetonitrile	24
Dichloroacetonitrile	9.6
Trichloroacetonitrile	15
Haloketones (HK):	-
1,1-Dichloro-2-propanone	7.2
1,1,1-Trichloro-2-propanone	8.2
Heptachlor	25
Heptachlor epoxide	10.7
Hexachlorobutadiene	44
Hexachlorocyclopentadiene	60
Lindane	55
Methoxychlor	50
Pentachlorophenol	96
Simazine	120
Styrene	150
1,1,2,2-Tetrachloroethane	81
Tetrachloroethylene	81
Toluene	78
2,4,5-TP (silvex)	270
Tribromoacetic acid	42
1,2,4-Trichlorobenzene	160
1,1,1-Trichloroethane	84
1,1,2-Trichloroethane	150
Trichloroethylene	180
Trihalomethanes (chloroform surrogate)	300
Xylenes (total)	70

Other Conditions: the contaminant reduction performance capabilities displayed for Table 2 of 4 were verified by testing conducted in accordance with NSF *International* Standard 58. To qualify for the reduction of the

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organic contaminants listed above, the device must reduce the influent challenge concentration of chloroform at 300 µg/L ± 10% at each sample point by a minimum of 95%.

1 = micrograms per liter (µg/L) are equivalent to parts per billion (ppb)

**HEALTH EFFECTING BIOLOGICAL CONTAMINANT REDUCTION CAPABILITIES
PRODUCT FILE NUMBER 20110311
TABLE 3 OF 4**

Production Rate: 60.6 liters per day (lpd) [16.02 gallons per day (gpd)]

Capacity: dependent on the type and quantity of particulate matter present in the influent water; the need for maintenance may be indicated by a significant decrease in flow rate.

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

Other Conditions: the contaminant reduction performance capabilities displayed for Table 3 of 4 were verified by testing conducted in accordance with NSF *International* Standard 53. To qualify for cyst/oocyst reduction, the device must reduce the influent challenge concentrations by ≥ 99.95% at each sample point.

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

#/ml = particles per milliliter

≥ = greater than or equal to

**AESTHETIC CONTAMINANT REDUCTION CAPABILITIES
PRODUCT FILE NUMBER 20110311
TABLE 4 OF 4**

Production Rate: 60.6 liters per day (lpd) [16.02 gallons per day (gpd)]

Tested Contaminant	Influent Challenge (mg/l) ¹
Total Dissolved Solids (NaCl)	750 ± 40

Other Conditions: the contaminant reduction performance capabilities displayed for Table 4 of 4 were verified by testing conducted in accordance with NSF *International* Standard 58. To qualify for total dissolved solids reduction performance, the device must reduce the influent challenge concentrations by ≥ 75%.

1 = milligrams per liter (mg/l) are equivalent to parts per million (ppm)

± = plus or minus

≥ = greater than or equal to

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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
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Safety and Buildings Division
Department of Safety and Professional Services
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