Performance Data Sheet

Important Notice: Read this Performance Data Sheet and compare the capabilities of this system with your actual water treatment needs. It is recommended that, before installing a water treatment system, you have your water supply tested to determine your actual water treatment needs.

Culligan knows the more informed you are about your water treatment systems, the more confident you will be about its performance. It's because of this and more than seventy years of commitment to customer satisfaction that Culligan is providing this Performance Data Sheet to its customers.

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Product: Culligan Aqua-Cleer Advanced Drinking Water Systems

Use Guidelines:

- Working Pressure: 40 – 120 psig (280-827 kPa)
- Do not allow exposure to temperature below 33°F (1°C)
- Maximum operating temperature: 100°F (38°C)
- These systems must be installed according to local plumbing codes on the cold water line.
- This system requires regular replacement of all filters to maintain proper operation. Depending on usage and influent water quality, the carbon and particulate filters should be changed at least annually and the reverse osmosis membrane should be replaced every 3-5 years. Varying chlorine, sediment or TDS levels may affect replacement frequency.

CAUTION! Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Systems certified for cyst reduction may be used on disinfected water that may contain filterable cysts.

Total Defense (TD)

The Total Defense has been tested according to NSF/ANSI 42 and 53 for the reduction of the substances listed below. The concentration of the indicated substances in the water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42 and 53.

Substance	Influent Challenge Concentration	Maximum Permissible Product water Concentration	Reduction Requirements	Minimum Reduction	Average Reduction
Standard 42					
Aesthetic Chlorine	2.0 mg/L + 10%		>50%	96.0%	97.9%
Aesthetic Chloramines	3.0 mg/L + 10%	0.5 mg/L		96.0%	97.9%
Particulate (0.5 - < um) Class I	At least 10,000 particles/mL		>85%	99.9%	99.9%
Standard 53					
MTBE	0.015 + 20%	0.005 mg/L		92.1%	96.4%
Cyst †	Minimum 50,000/L		99.95%	99.99%	99.99%
Turbidity	11 mg/L + 1 NTU	0.5 NTU		99.1%	99.1%
Lead (pH 6.5)	0.15 mg/L + 10%	0.010 mg/L		98.7%	99.3%
Lead (pH 8.5)	0.15 mg/L + 10%	0.010 mg/L		99.3%	99.3%
Mercury (pH 6.5)	0.006 mg/L + 10%	0.002 mg/L		96.7%	96.7%
Mercury (pH 8.5)	0.006 mg/L + 10%	0.002 mg/L		89.7%	95.9%
Chloroform (VOC surrogate chemical)	0.300 mg/L + 10%	0.015 mg/L		97.5%	99.6%

Flow Rate = 0.5 gpm (1.89 Lpm)
Capacity = 1,000 gallons (3786 L)
† Based on the use of microspheres or Cryptospordium parvum oocysts
Testing was performed under standard laboratory conditions, actual performance may vary.

Organic Chemicals Included in Surrogate Testing:

Applies to Total Defense (TD) only.

Substance	Influent Challenge Concentration mg/L	Maximum permissible product water concentration mg/L
Alachor	0.050	0.001
Atrazine	0.100	0.003
Benzene	0.081	0.001
Carbofuran	0.190	0.001
Carbon Tetrachloride	0.078	0.002
Chlorbenzene	0.077	0.001
Chlorpicrin	0.015	0.000
2,4-d	0.110	0.002
Dibromochloropropane (Dbcp)	0.052	0.000
O-Dichlorobenzene	0.080	0.001
P-Dichlorobenzene	0.040	0.001
1,2-Dichloroethane	0.088	0.005
1,1-Dichloroethylene	0.083	0.001
Cis-1,2-Dichloroethylene	0.170	0.001
Trans-1,2-Dichloroethylene	0.086	0.001
1,2-Dichloropropane	0.080	0.001
Cis-1,3-Dichloropropylene	0.079	0.001
Dinoseb	0.170	0.000
Endrin	0.053	0.001
Ethylbenzene	0.088	0.001
Ethylene Dibromide (Edb)	0.044	0.000
Haloacetonitriles (Han):		
Bromochloroacetonitrile	0.022	0.001
Dibromoacetonitrile	0.024	0.001
Dichloroacetonitrile	0.001	0.000
Trichloracetonitrile	0.015	0.000
Haloketones (Hk):		
1,1-Dichloro-2-propane	0.007	0.000
1,1,1-Trichloro-2-propane	0.008	0.000
Heptachlor	0.250	0.000
Heptachlor Epoxide	0.011	0.000
Hexachlorobutadiene	0.044	0.001
Hexachlorocyclopentadiene	0.060	0.000
Lindane	0.055	0.000
Methoxychlor	0.050	0.000
Pentachloophenol	0.096	0.001
Simazine	0.120	0.004

Substance	Influent Challenge Concentration mg/L	Maximum permissible product water concentration mg/L
Styrene	0.150	0.001
1,1,2,2-Tetrachloroethane	0.081	0.001
Tetrachloroethylene	0.081	0.001
Toluene	0.078	0.001
2,4,5-tp (Silvex)	0.270	0.002
Tribromoacetic Acid	0.042	0.001
1,2,4-Trichlorobenzene	0.160	0.001
1,1,1-Trichloroethane	0.084	0.005
1,1,2-Trichloroethane	0.150	0.001
Trichloroethylene	0.180	0.001
Trihalomethanes (Includes):		
Chloroform (Surrogate Chemical)		
Bromoform	0.300	0.015
Bromodichloromethane		
Chlorodibromomethane		
Xylenes (Total)	0.070	0.001

RO30

This system has been tested according to NSF/ANSI 58 for the reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 58.

This system is acceptable for treatment of influent concentrations of no more than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and is certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

Substance Reduction[1]

Contaminant	Average Influent Concentration mg/L	Average Effluent Concentration mg/L	Average Percent Reduction	Maximum Effluent Concentration mg/L
Arsenic (Pentavalent)[2]	0.053	0.001	97.6%	0.003
Barium	11.0	0.37	96.6%	0.49
Cadmium	0.031	0.0004	98.7%	0.0005
Hexavalent Chromium	0.31	0.011	96.4%	0.014
Trivalent Chromium	0.31	0.005	98.5%	0.007
Copper	3.0	0.02	99.3%	0.033
Fluoride	8.2	0.4	94.5%	0.7
Lead	0.16	0.002	99.0%	0.002
Nitrate/ Nitrite (both as N)	30 +/- 10%		79.1%	
Nitrate[5]	27.0 +/- 10%	10.0	79.6%	
Nitrite	3.0 +/- 10%	1.0	72.6%	
Radium 226/228[3]	25pCi/L	5pCi/L	80.0%	5pCi/L
Selenium	0.097	0.003	97.3%	0.004
Cyst[4]	>50,000/mL		99.99%	
Turbidity	11 NTU	0.1 NTU	99.1%	0.1 NTU

[1] While testing was performed under standard laboratory conditions, actual performance may vary depending on water pressure, temperatures and other substances, which may be found in your water.
[2] This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5) or arsenate) at concentrations of 0.050 mg/L or less. This system reduces pentavalent arsenic, but may not remove other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual at the system inlet or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramines (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts Sheet for further information.
[3] Based upon testing methods using Barium as a surrogate. All concentrations in pCi/L pico curie/L.
[4] Includes Giardia lamblia, Entamoeba histolyca and Cryptosporidium.
[5] Units are not certified on water supplies with a pressure less than 40 psi (280 kPa). A booster pump is strongly recommended.

Output (Total Dissolved Solids (TDS) Reduction and Output Production)[1] – RO30

Tank Size	2 gallon	3 gallon	9 gallon
Product System Daily Prod. Rate To Pressurized Storage Tank	11.27 gpd	11.27 gpd	11.27 gpd
Prod. Rate without Storage Tank To Atmosphere	36 gpd	36 gpd	36 gpd
Efficiency Rating[2]	16.23%	16.23%	16.23%
Recovery Rating[3]	30.41%	30.41%	30.41%
Influent Challenge Concentration (Mg/L)	770	770	770
Max. Permissible Product Water Concentration (Mg/L)	187	187	187
Minimum Percent Removal	95.5%	95.5%	95.5%
Average Percent Removal	96.0%	96.0%	96.0%

[1] This is a factory specification for membrane production. Actual production rate and TDS rejection will depend on temperature, water pressure, TDS level, membrane variation and usage pattern.

[2] Efficiency rating means the percentage of the influent water to the system that is available to the user are reverse osmosis treated water under operating conditions that approximate daily usage.

[3] Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed.

Output (Total Dissolved Solids (TDS) Reduction and Output Production)[1] – RO50

Tank Size	2 gallon	3 gallon	9 gallon
Product System Daily Prod. Rate To Pressurized Storage Tank	13.93 gpd	13.93 gpd	13.93 gpd
Prod. Rate without Storage Tank To Atmosphere	50 gpd	50 gpd	50 gpd
Efficiency Rating[2]	15.79%	15.79%	15.79%
Recovery Rating[3]	32.55%	32.55%	32.55%
Influent Challenge Concentration (Mg/L)	770	770	770
Max. Permissible Product Water Concentration (Mg/L)	187	187	187
Minimum Percent Removal	94.4%	94.4%	94.4%
Average Percent Removal	96.8%	96.8%	96.8%

[1] This is a factory specification for membrane production. Actual production rate and TDS rejection will depend on temperature, water pressure, TDS level, membrane variation and usage pattern.

[2] Efficiency rating means the percentage of the influent water to the system that is available to the user are reverse osmosis treated water under operating conditions that approximate daily usage.

[3] Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed.

Output (Total Dissolved Solids (TDS) Reduction and Output Production)[1] – RO75

Tank Size	2 gallon	3 gallon	9 gallon
Product System Daily Prod. Rate To Pressurized Storage Tank	20.28 gpd	20.28 gpd	20.28 gpd
Prod. Rate without Storage Tank To Atmosphere	75 gpd	75 gpd	75 gpd
Efficiency Rating[2]	14.77%	14.77%	14.77%
Recovery Rating[3]	28.58%	28.58%	28.58%
Influent Challenge Concentration (Mg/L)	770	770	770
Max. Permissible Product Water Concentration (Mg/L)	187	187	187
Minimum Percent Removal	94.4%	94.4%	94.4%
Average Percent Removal	95.5%	95.5%	95.5%

[1] This is a factory specification for membrane production. Actual production rate and TDS rejection will depend on temperature, water pressure, TDS level, membrane variation and usage pattern.

[2] Efficiency rating means the percentage of the influent water to the system that is available to the user are reverse osmosis treated water under operating conditions that approximate daily usage.

[3] Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed.

Testing Conditions (Complete System)

Temperature: 77° F + 2° F

pH: 7.5 + 0.5

Pressure: 50 psi

Turbidity: <1 NTU

This system has been tested and shown to operate at its calculated recovery rating under standard laboratory conditions.

This reverse osmosis system contains a replaceable component critical to the efficiency of the system. Replacement of the reverse osmosis component should be with one of identical specifications, as defined by the manufacturer, to assure the same efficiency and contaminant reduction performance.

The Aqua-Cleer CB, GAC, or GAC-L cartridge has been tested and certified by NSF International against NSF/ANSI Standard 42 for the effective reduction of aesthetic Chlorine Taste and Odor, the TD cartridge for the effective reduction of aesthetic Chlorine Taste and Odor and Nominal Particulate Class 1 and against CSA B483.1.[1]

The Aqua-Cleer Advanced Drinking Water System with TD cartridge has been tested and certified by NSF International against NSF/ANSI Standard 53 for the effective reduction of Cyst, Lead, Mercury, VOC, MTBE and Turbidity and against CSA B483.1.

The Aqua-Cleer Advanced Drinking Water System with RO30, RO50 or RO75 has been tested and certified by NSF International against NSF/ANSI Standard 58 for the effective reduction of TDS, pentavalent arsenic, barium, cadmium, hexavalent and trivalent chromium, copper, lead, nitrate/nitrite, radium 226/228 and selenium. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system as specified in NSF/ANSI 58 and against CSA B483.1.

The Aqua-Cleer Advanced Drinking Water System with AS3 has been tested and certified by NSF International against NSF/ANSI Standard 53 for the effective reduction of arsenic (trivalent and pentavalent) when following an RO and against CSA B483.1.

Refer to your Installation and Operating Instructions and printed limited Warranties for more specific product information. To avoid contamination from improper handling and installation, your system should only be installed and serviced by your Culligan Man. Performance will vary based on local water conditions. The substances reduced by these systems are not necessarily in your water.

[1]Reduction claims and capacity not applicable when used as a prefilter to the Aqua-Cleer RO system.