



Colorado Department of Public Health and Environment

# Summary of Accepted Bag and Cartridge Alternative Filtration Technologies

Colorado Department of Public Health and Environment - Water Quality Control Division - Engineering Section

Revised July 2016

<http://www.colorado.gov/cdphe/wqcd>

Manufacturer	Model	Compliance Credit Awarded		Log Inactivation Required through Disinfection			Flow Rate / Flux	Max Differential Pressure (DP) or Trans Membrane Pressure (TMP) (psid)	Max Influent Turbidity	Demonstrated Log Removal		Local Contact
		Giardia	Crypto	Giardia	Crypto	Viruses				Giardia	Crypto	
<b>Bag and Cartridge</b>												
Graver Technologies	QCR, QMA Cartridge Filter	2.5	2.0*	0.5	N/A*	4.0	7 gallons per minute (GPM) for 10 inch (in.) cartridges 14 GPM for 20 in 21 GPM for 30 in 28 GPM for 40 in	35	Pretreatment is required	3.7	3.7	Dirk Lamprecht Industrial Process Technologies 303-975-9487 dirk@iptequipment.com
	WaterTEC Cartridge Filter	2.5	2.0*	0.5	N/A*	4.0				3.8	3.8	
	ZTEC-B Cartridge Filter	2.5	2.0*	0.5	N/A*	4.0				3.8	3.8	
Harmsco	PPFS-HC-40-1 PPFS-HC-90-1 PPFS-HC-170-1	2.5	2.0*	0.5	N/A*	4.0	15 GPM (HC 40) 30 GPM (HC 90) 50 GPM (HC 170)	25	1 NTU	3.5	3.5	Charles Greaves Water Technology Group 6345 Downing St. Denver, CO 80216 303-524-6916 cgreaves@wtrgroup.com
	HC/40-LT2 HC/90-LT2 HC/170-LT2	2.5	2.0*	0.5	N/A*	4.0	MUNI 40 MP (30 GPM) MUNI 90 MP (65 GPM) MUNI 170 MP (100 GPM) MUNI-1-2FL-304 (100GPM) MUNI-3-3FL-304 (300GPM) MUNI-5-4FL-304 (500GPM) MUNI-8-6FL-304 (800 GPM)	30	1 NTU	3.6	3.6	
Rosedale	PS-740-PPP-356	2.5	2.0*	0.5	N/A*	4.0	8135-2F—1-150-S-E-700-NSF 20 GPM 18435-2F—1-150-S-E-700-NSF 80 GPM 24435-3F1-150-S-E-700-NSF 140 GPM 36435-4F—1-150-S-E-700-NSF 360 GPM 42435-4F—1-150-S-E-700-NSF 420 GPM 48435-6F-1-150-S-E-700-NSF 580 GPM	30	1 NTU	3.1	3.1	Dan Morosky Rosedale Products 734-623-1129 / 734-665-8201 danm@rosedaleproducts.com
Strainrite	Strainrite Two Stage Filtration System: Aqua-Maxx PF-A Prefilter Aqua-Maxx FF-A Final Filter AQ2-2 vessel (manufactured after 1/1/2007) with AQB-Perf support basket	2.5	2.0*	0.5	N/A*	4.0	50 GPM	18- across both stages	Comprehensive Particle Size Analysis Test Recommended	3.5	3.5	Dennis Smith ProWest Filtration, Inc. 303-803-8301 dsmith@prowestfiltration.com
	Strainrite Two Stage Filtration System: HPM99-CC-2-SR Prefilter HPM99-CCX-2-SR Final Filter AQ2-2B vessel with AQC-1 compression device	2.5	2.0*	0.5	N/A*	4.0	20 GPM	25 - per individual stage	5 NTU Pretreatment can be utilized to meet this goal	3.0	3.0	

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## Summary of Accepted Alternative Membrane Filtration Technologies

Colorado Department of Public Health and Environment - Water Quality Control Division - Engineering Section

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Manufacturer	Model	Compliance Credit Awarded		Log Inactivation Required through Disinfection			95% Effluent Turbidity	Direct Integrity Testing Frequency	Max Flux @ 20°C	Max Flux @ 1°C	Max Trans Membrane Pressure (TMP) (psid)	Max Influent Turbidity or Prescreening	Local Contact
		Giardia	Crypto	Giardia	Crypto	Viruses							
<b>Microfiltration/Ultrafiltration</b>													
ATECH Innovations	GMBH Ceramic Modules (0.1 Micron)	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	314	179	25	Not required	David Stewart, PhD, PE Stewart Environmental 970-226-5500 dave.stewart@stewartenv.com
BASF-inge	dizzer XL 0.9 MB 60	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	105	60	21	300 micron required.	Dave Holland Aqua-Aerobic Systems, Inc. (815) 639-4470 dholland@aqua-aerobic.com
	dizzer XL 0.9 MB 70	3.0	3.0*	0.0	N/A*	4.0			105	60	21		
	dizzer XL 1.5 MB 40	3.0	3.0*	0.0	N/A*	4.0			105	60	21		
	dizzer XL 1.5 MB 50	3.0	3.0*	0.0	N/A*	4.0			105	60	21		
Dow Water and Process Solutions	SFD-2860 and 2880	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	70	40	30	300 micron required.	Kelly Lange-Haider Dow Water and Process Solutions (952) 897-4311 KPlange-haider@dow.com
	IntegraPac-51 and 77	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	70	40	30	300 micron required.	
	IntegraFlo-74 and 102	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	70	40	30	300 micron required.	
Evoqua formerly Siemens	L10V or N	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	80 (L10V) 155 (L10N)	46 (L10V) 88 (L10N)	22	250 - 500 micron pre-screening is required.	Nick Lucas Evoqua Water Technologies 719-359-6195 Nicholas.Lucas@evoqua.com
	L20V or N	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	80 (L20V) 155 (L20N)	46 (L20V) 88 (L20N)	22		
	L40N	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	70	40	22		
	S10N	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	80	46	22		
GE Power & Water	Zeeweed 500	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	60	34	12	Prescreening typically required.	Kevin Dufresne, P.E. GE Water (905) 465-3030 x3093 Kevin.Dufresne@ge.com
	Zeeweed 1000	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	60	34	13		
	Zeeweed 1500-550 and 1500-600	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	90 (1500-550) 100 (1500-600)	51 (1500-550) 57 (1500-600)	45		
Kruger/ Metawater	KCM269	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	175	100	55.0	Up to 2000 NTU Tested	D.H. Lindsey Co. Douglas Lindsey 303-843-9116
Pall	Microza	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120	69	43.5	Not spec'd. Prescreen typical.	Mark Sampson Water Control Corp 303-477-1970



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## Summary of Accepted Alternative Membrane Filtration Technologies

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Revised July 2016

<http://www.colorado.gov/cdphe/wgqd>

Manufacturer	Model	Compliance Credit Awarded		Log Inactivation Required through Disinfection			95% Effluent Turbidity	Direct Integrity Testing Frequency	Max Flux @ 20°C	Max Flux @ 1°C	Max Trans Membrane Pressure (TMP) (psid)	Max Influent Turbidity or Prescreening	Local Contact
		Giardia	Crypto	Giardia	Crypto	Viruses							
<b>Microfiltration/Ultrafiltration</b>													
Pentair - Innovative Water Technologies	Homespring UF211	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	4.5 GPM continuous at 20 deg. C	4.5 GPM continuous at 1 deg. C	40	Prefiltration is required	Jack Barker Innovative Water Technologies 719-254-4426/ 877-567-9310 sales@innovativeH2o.com
Pentair X-Flow B.V.	X-Flow SXL-225 and SXL-55	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120	68	31	Pretreatment required if raw water exceeds 100 NTU	Deb Jensen Filter Tech Systems, Inc. 888-287-8292 / 970-254-2855 Deb@filtertechsystems.com
Polymem	Polymem UF120S2	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	27	15.4	29.0	200 micron prescreen	Polymem Direct
Scinor Water America	SMT600-P50	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120	68	43.5	Required - not specified	Jan Cornelius, P.E. Scinor Water America Phone: 607.342.6528 Email: jan.cornelius@scinor.com
	SMT600-P80	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120	68	43.5	Required - not specified	
	SMT600-P23	4.0	3.0*	1.0	N/A*	5.0	≤0.1 NTU - CFE	1X Week	120	68	68	Required - not specified	
	SMT600-P38	5.0	3.0*	2.0	N/A*	6.0	≤0.1 NTU - CFE	1X Week	120	68	68	Required - not specified	
	SMT600-S26	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120	68	11.0	Required - not specified	
Toray	Toray HFS-2020 and HFU-2020N	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week	120 (HFS-2020) 100 (HFU-2020N)	68 (HFS-2020) 57 (HFU-2020N)	29.0	100 NTU Max	Susan L Guibert, P.E. Toray Membrane USA, Inc. Mobile: 858.382.2813 E-mail: Guibert.Sue@toraymem.com
<b>Reverse Osmosis/ Nanofiltration</b>													
Various	Various	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week - surrogate WQ parameter (sulfate, TOC, etc.)	Based on specific manufacturer information	Based on specific manufacturer information	Based on vendors specs	Pretreatment is required	Various
Hydranautics	Various	3.0	3.0*	0.0	N/A*	4.0	≤0.1 NTU - CFE	1X Week - surrogate WQ parameter	Site Specific	Site Specific	Site Specific	Pretreatment is required	Hydranautics - A Nitto Denko Company 760-901-2563

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## Summary of Accepted Membrane Filtration Skids

Colorado Department of Public Health and Environment - Water Quality Control Division - Engineering Section

Revised December 2015

<http://www.colorado.gov/cdphe/wgqd>

Manufacturer	Model	Compliance Element/Module	Accepted Flow Rate	Flow Rate Units (gpm, MGD, gallons per day)	Backflow prevention for CIP	Local Contact
<b>Microfiltration/Ultrafiltration</b>						
Dow Water and Process Solutions	IntegraFlo-74 and 102 Skids	KCM269	Various	N/A	Double block and bleed	Kelly Lange-Haider Dow Water and Process Solutions (952) 897-4311 KPlange-haider@dow.com
	IntegraPac-51 and 77 Skids	KCM269	Various	N/A	Double block and bleed	
Evoqua Water Technologies, Inc. (formerly Siemens-Memcor)	XP 3-24L10V	L10V	25,000 - 750,000 must show flux calcs	gallons per day	Double block and bleed	Nick Lucas Evoqua Water Technologies 719-359-6195 Nicholas.Lucas@evoqua.com
	XP 18-42L20V	L20V			Double block and bleed	
	CP 48-120L20V	L20V	500,000 - 6,000,000 - must show flux calcs	gallons per day	Double block and bleed	
	CP 132-240L20V	L20V			Double block and bleed	
	CPII MR1, MR2, MR4	L40N	175K - 3000K	gallons per day	Double block and bleed	
	XPE 2L10V	L10 V	9	gpm	Manual Air gap	
	XPE 3L10V	L10V	13.5	gpm	Manual Air gap	
	XPE 4L10V	L10V	18	gpm	Manual Air gap	
	XPE 6L10V	L10V	27	gpm	Manual Air gap	
XPE 9L10V	L10V	40.5	gpm	Manual Air gap		
XPE 12L10V	L10V	54	gpm	Manual Air gap		
Filter Tech Systems Inc.	UFX-1	X-Flow SXL-225	20	gpm	Double block and bleed	Deb Jensen Filter Tech Systems, Inc. 888-287-8292 / 970-254-2855 Deb@filtertechsystems.com
	UFX-2		40	gpm	Double block and bleed	
	UFX-3		85	gpm	Double block and bleed	
	UFX-4		210	gpm	Double block and bleed	
	UFX-5		375	gpm	Double block and bleed	
	UFX-6		585	gpm	Double block and bleed	
	UFX-7		835	gpm	Double block and bleed	
	UFX55-1	X-Flow SXL-55	29	gpm	Double block and bleed	
	UFX55-2		57	gpm	Double block and bleed	
	UFX55-3		143	gpm	Double block and bleed	
	UFX55-4		287	gpm	Double block and bleed	
	UFX55-5		574	gpm	Double block and bleed	
	UFX55-6		918	gpm	Double block and bleed	
	UFX55-7		1147	gpm	Double block and bleed	
	UFX55-8		1434	gpm	Double block and bleed	
GE Power & Water	Z-Pak-350 12 module	ZW-1500-550	260	gpm	Block and bleed (Valves, FV301, 302, 601, 602, 704, and 705)	Kevin Dufresne, P.E. GE Water (905) 465-3030 x3093 Kevin.Dufresne@ge.com
	Z-Pak-350 12 module	ZW-1500-600	255	gpm	Block and bleed (Valves, FV301, 302, 601, 602, 704, and 705)	
	Z-Pak-350 24 module	ZW-1500-550	520	gpm	Block and bleed (Valves, FV301, 302, 601, 602, 704, and 705)	
	Z-Pak-350 24 module	ZW-1500-600	510	gpm	Block and bleed (Valves, FV301, 302, 601, 602, 704, and 705)	
Kruger/ Metawater	8R10E	KCM269	3,766,000	gallons per day (80 modules, 20deg C)	Double block and bleed	D.H. Lindsey Co. Douglas Lindsey 304 Inverness Way South, Suite 170 Englewood, CO 80112 303-843-9116
	10R10E	KCM269	4,707,500	gallons per day (100 modules, 20deg C)	Double block and bleed	
Pall Corporation	Aria AP1	Microza	28	gpm	Double block and bleed	Mark Sampson Water Control Corp 303-477-1970 m.sampson@watercontrolcorp.com
	Aria AP2	Microza	49	gpm	Bleed to tank 2 - w/level sensor	
	Aria AP3	Microza	174	gpm	Bleed to tank 2 - w/level sensor	
	Aria AP4	Microza	347 (500)* - starting 2011	gpm	Bleed to tank 2 - w/level sensor	
	Aria AP6	Microza	694	gpm	Bleed to tank 2 - w/level sensor	
	Aria AP6x	Microza	867	gpm	Bleed to tank 2 - w/level sensor	
	Aria AP8	Microza	1388	gpm	Bleed to tank 2 - w/level sensor	



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Pentair/ Innovative Water Technologies (IWT)	UF 5	Homespring UF211	5,000	gallons per day	Air gap	Jack Barker Innovative Water Technologies 719-254-4426/ 877-567-9310 sales@innovativeH2o.com
	UF 10	Homespring UF211	10,000	gallons per day	Air gap	
	UF 20	Homespring UF211	20,000	gallons per day	Air gap	
	UF 30	Homespring UF211	30,000	gallons per day	Air gap	
	UF 40	Homespring UF211	40,000	gallons per day	Air gap	
	UF 50	Homespring UF211	50,000	gallons per day	Air gap	
	SS 24	Homespring UF211	5,000	gallons per day	Air gap	
	SS 36	Homespring UF211	10,000	gallons per day	Air gap	
WesTech	AltaFilter (other)	HFU-2020N	Various	N/A	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	Lindsay Housley, P.E. WesTech 801.290.6404 lhousley@westech-inc.com
	AF18	HFU-2020N	540	gpm	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	
	AF22	HFU-2020N	660	gpm	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	
	APIII	HFU-2020N	75	gpm	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	
	APVI	HFU-2020N	150	gpm	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	
	APXII	HFU-2020N	300	gpm	Block and Bleed (valves AV-x02A, AV-x02B and AV-x20)	
Wigen Water Technologies	Not Spec'd case by case	Toray HFS-2020/ HFU-2020N Dow SFD-2880, IntegraFlo-102	None - must verify on each submittal	N/A	Double block and bleed	Michael Bourke Wigen Water Technologies 6500 S. Quebec St, Suite 300 I Centennial, CO 80111 USA T: (303) 350-3086

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