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Technical Bulletin

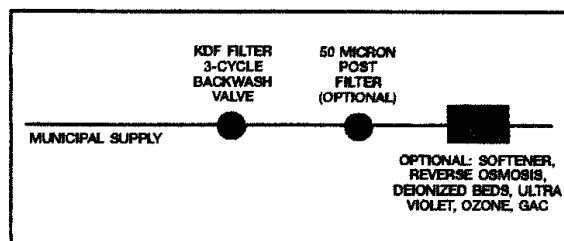
KDF Fluid Treatment, Inc. • Research and Development Laboratory • Three Rivers, Michigan

KDF® 55 Process Medium in Point-of-Entry Water Treatment Systems – Chlorine Reduction

KDF® 55 process medium is an effective chlorine removal agent used in point-of-entry treatment of municipal water supplies. This unique, innovative and environmentally responsible medium consists of high purity copper-zinc granules that use redox (the exchange of electrons) in patented products to effectively reduce/remove chlorine and heavy metals and control microorganisms in potable water. This bulletin describes the use of KDF 55 medium in residential (whole house), commercial, institutional, and light industrial buildings and facilities having potable water service flow in a range from three (3) to three hundred twenty-four (324) gallons per minute with maximum chlorine concentrations of 5 ppm/mgl.

Medium Requirements and System Sizing

Easily the most critical aspect of pressure filter performance is the relationship of flow



rate to surface of KDF 55 process medium. Inaccurate sizing is the most common reason for trouble in filter systems. The nominal flow rate in the service cycle depends on surface area available. For most types of filter media, the service flow rate must not exceed five gallons per minute (gpm) per square foot of surface area, with at least a 30-inch filter bed depth.

Service flow rates with KDF 55 process medium, however, may be calculated at 15 gpm per square foot of surface area. This is three times the effective flow rate of other filter media.

KDF 55 Medium POE Recommended Operating Conditions (use 3-cycle valve)

Service flow (10" bed depth)	15 gpm/ft ²
Backwash for 10 min. @	twice the service flow
Purge/rinse for 3 min.	twice the service flow
Bed expansion, backwash	10 to 15%
Free board	20%
Minimum bed depth (6" dia.)	10"
pH range: drinking water	6.5 to 8.5
Water temperature, influent	35°F to 212°F
<i>(Always maintain wetness)</i>	

Back- washing KDF process media

In electrochemical reduction processes, small amounts of oxides are formed when KDF 55 process medium is used in point-of-entry (POE) water treatment

systems. These oxides, along with any calcium and magnesium precipitate, *must be* periodically backwashed. For backwash rates of 3 to 25 gpm, use a high quality 3-cycle backwash valve (service, backwash, purge). One with a high-flow backwash mode is best. For 36 to 324 gpm, use a diaphragm nest valve.

Remember to remove any backwash flow restrictors. Select a distributor based on backwash flow rate. For 3 to 25 gpm, use a felt or fine slotted distributor and for 36 to 324 gpm, use a hub and lateral distributor (#8 garnet underbedding is recommended). Time the backwash cycle for ten minutes and purge for three minutes. Backwash at least three times per week, more frequently if

necessary, depending upon the quality of the municipal water supply. If more backwashing is required, repeat the entire cycle.

Backwash flow rates are a function of backwash water temperature; type, size and density of media; and the specific design of the pressure filter. KDF 55 process medium has a density of 171 pounds per cubic foot, which makes it a very high density medium requiring a backwash flow rate of twice the service flow.

KDF 55 medium requires 30 gallons per minute per square foot of bed surface area. Very cold water requires somewhat lower backwash rates and warmer water requires higher rates. Do not restrict pipe size to the drain.

Note: If backwashing procedures are not properly followed, KDF process media may become fouled. For proper cleaning techniques, contact KDF's Technical Department.

Maximum Service Flow (gpm)	Tank Size Diameter (inches)	Backwash Valve Required	Distributor	Minimum Backwash Rate (gpm)	Pipe Size Diameter (inches)	KDF 55 Process Medium			
						Bed Depth (inches)	Weight (lbs)	Volume (cu. ft.)	No. of Drums
3	6x35	3-cycle	Felt or fine slotted	6	0.75	10	28.5	0.16	0.5
4	7x35			8	0.75	11	42.8	0.25	0.75
5.5	8x40			10	0.75	12	57.0	0.33	1.0
6	9x42			12	0.75	13	85.5	0.50	1.5
8	10x44			16	0.75	14	114.0	0.66	2.0
11	12x48			22	1	16	171.0	1.04	3.0
15	14x65			30	1	18	285.0	1.60	5.0
20	16x65			40	1.5	20	399.0	2.33	7.0
25	18x65	Diaphragm nest	Hub and lateral	50	1.75	22	627.0	3.50	11.0
36	21x62			72	2	24	855.0	5.00	15.0
45	24x72			90	2	25	1140.0	6.50	20.0
72	30x70			144	2.5	25	1767.0	10.25	31.0
100	36x70			200	2.5	25	2565.0	14.75	45.0
144	42x73			288	3	25	3420.0	20.00	60.0
188	48x78			376	4	25	4446.0	26.00	78.0
324	63x86			648	5	25	7695.0	45.00	135.0

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