



K D F Fluid Treatment, Inc. Technical Bulletin

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

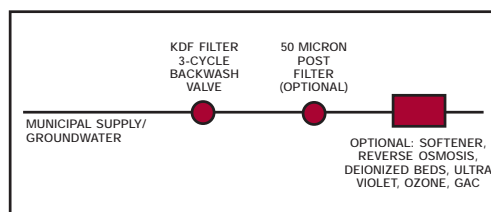
KDF® 55 and 85 Process Media in Point-of-Entry Water Treatment Systems – Chlorine, Iron and Hydrogen Sulfide Reduction

What is KDF Process Media?

KDF Process Media are high-purity copper-zinc granules that reduce contaminants in water using oxidation/reduction (redox) reaction. **KDF 55 process medium is an effective chlorine removal agent**

used in point-of-entry (POE) treatment of municipal water supplies. KDF 85 process medium is an effective iron (ferrous) and hydrogen sulfide (H₂S) removal agent that may be used alone or to protect existing water filtration/purification technologies in POE treatment of groundwater supplies.

These unique, innovative and environmentally responsible media consist of high purity copper-zinc granules that use redox (the exchange of electrons) in patented



products to effectively reduce/remove chlorine, iron, hydrogen sulfide, heavy metals, and control microorganisms in potable water without the use of chemicals. What's more, KDF 55 and 85 media are highly efficient and tank size requirements are modest for more economical system engineering and installation.

This bulletin describes the proper use of KDF media in residential (whole house), commercial, institutional, and light industrial buildings and facilities with potable water service flows in a range from 3 to 324 gallons per minute with maximum chlorine, iron, and H₂S 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 media. 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.

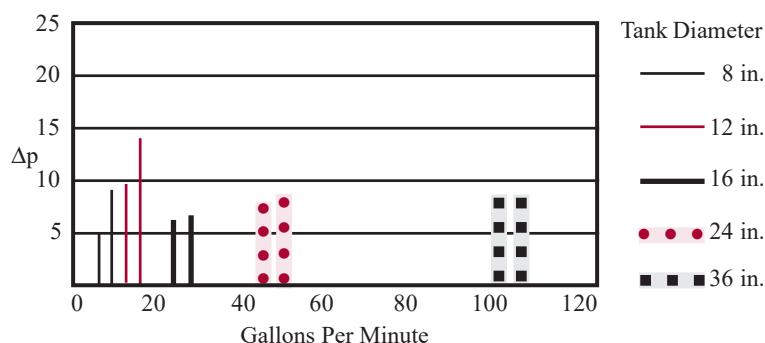
Service flow rates with KDF Process Media, however, may be calculated at 15 gpm per square foot of surface area (0.104 gpm per square inch). This is three times the effective flow rate of other filter media.

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

Service flow	15 gpm/sq. ft.
Backwash for 10 min. @	30 gpm /sq. ft.
Purge/rinse for 3 min. @	maximum
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

(Always maintain wetness)

Pressure Drop, KDF® Media (Δp)



Back- washing KDF Process Media

In electrochemical reduction processes, surface products are formed when KDF® media are used in point-of-entry (POE) water treatment systems. These

byproducts, 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 11 gpm, use a fine slotted distributor and for 15 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 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 Process Media have 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 media require 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.

Engineering Guidelines for KDF Media

Maximum Service Flow (gpm)	Tank Size Diameter (inches)	Backwash Valve Required	Distributor	Minimum Backwash Rate (gpm)	Pipe Size Diameter (inches)	KDF Process Media			
						Bed Depth (inches)	Weight (lbs)	Volume (cu. ft.)	No. of Drums
3	6x35	3-cycle	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	9x44			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			50	1.75	22	627.0	3.50	11.0
36	21x62			Diaphragm nest	Hub and lateral	72	2	24	855.0
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



Solutions for economical clean water.™

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This Reduction Oxidation Media is Tested and Certified by NSF International against NSF/ANSI Standard 42 for material requirements only.



This Reduction Oxidation Media is Tested and Certified by NSF International against NSF/ANSI Standard 61 for material requirements only.

NOTICE: As of this printing, KDF Fluid Treatment believes the data herein are reliable and accurate. The data are based on outside and internal laboratory tests. Due to varying water chemistry, it is recommended that users test performance on their own equipment. As technical assistance is furnished by KDF Fluid Treatment at no charge to the user and since KDF Fluid Treatment has no control over engineering of hardware incorporating the KDF® media, KDF Fluid Treatment assumes no liability or responsibility for such assistance. Due to synthetic procedures used by outside laboratories, KDF Fluid Treatment is not responsible for differing results in the field. KDF Fluid Treatment assumes no responsibility for user claims on the pesticidal abilities of KDF media because of varying water chemistry and users' applications. Since governmental regulations may differ from one location to another and may change from time to time, KDF Fluid Treatment is not responsible for users' manufacturing procedures, disposal practices, selection of media, or claims or advertising by the user. No warranty, express or implied is given nor is freedom from any patent owned by KDF Fluid Treatment or others to be inferred.

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