

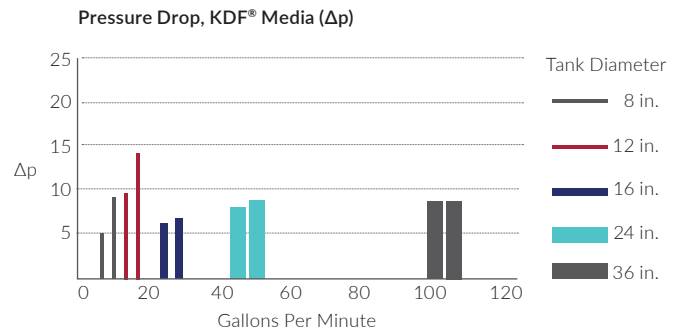
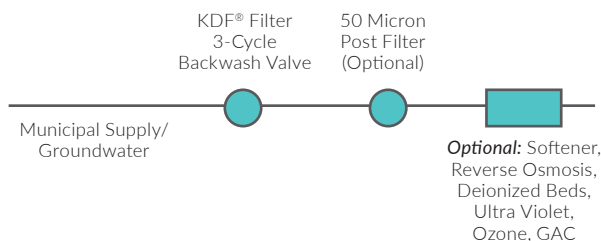
KDF® 55 and 85 Process Media in Point-of-Entry Water Treatment Systems: Chlorine, Iron and Hydrogen Sulfide Reduction

What is KDF® Process Media?

KDF® (Kinetic Degradation Fluxion) process media consists of a patented high-purity copper-zinc alloy that creates a redox (reduction-oxidation) reaction. The redox process involves the transfer of electrons between substances facilitating reactions to remove contaminants from water. Engineered for efficiency and versatility, KDF® 55 is highly effective in removing chlorine in point-of-entry (POE) treatment for municipal water supplies, while KDF® 85 excels at eliminating iron (ferrous) and hydrogen sulfide (H₂S) in POE treatment of groundwater.

These environmentally responsible medias go beyond contaminant removal by extending the lifespan and enhancing the performance of existing filtration systems. KDF® 55 and 85 media also control microorganisms and scale without the use of chemicals, offering a sustainable and cost-effective solution for potable water treatment. Their compact design allows for smaller tank sizes, streamlining system engineering and installation.

This technical bulletin provides guidance on the optimal use of KDF® media across residential, commercial, institutional, and light industrial applications, supporting service flows from 3 to 324 gallons per minute with maximum chlorine, iron, and Hydrogen Sulfide concentrations of 5 ppm.



Medium Requirements and System Sizing

Accurate sizing is essential for optimal pressure and filter performance, with the flow rate, relative to the surface area of the KDF® Media, being the key factor. Improper sizing is the most common cause of filter system issues.

For most filter media, the service flow rate must not exceed 5 gallons per minute (gpm) per square foot of surface area, with a minimum filter bed depth of 30 inches.

KDF® Process Media, however, offers a distinct advantage with a service flow rate of 15 gpm per square foot of surface area (or 0.104 gpm per square inch)—three times the effective flow rate of conventional filter media. This exceptional performance allows for more efficient and compact system designs.

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)

Backwashing Instructions for KDF® Media in POE Systems

Electrochemical Reduction Byproduct Management

Byproducts: Surface products formed during the process, along with calcium and magnesium precipitates, must be periodically backwashed.

Valve and Distributor Selection

Backwash Rates (3–25 gpm):

- Use a high-quality 3-cycle backwash valve (service, backwash, purge).
- Opt for a high-flow backwash mode for optimal performance.

Backwash Rates (36–324 gpm):

- Use a diaphragm nest valve for efficient operation.

Distributor Selection:

- 3–11 gpm: Fine slotted distributor recommended.
- 15–324 gpm: Use a hub and lateral distributor (#8 garnet underbedding suggested).

Cycle Timing

Backwash for 10 minutes.

Purge for 3 minutes.

Frequency

Backwash at least three times per week. Adjust frequency based on water supply quality.

- For additional cleaning, repeat the entire cycle as needed.

Flow Rate Considerations

Backwash Flow Rates:

- KDF® media require 30 gpm per square foot of bed surface area.

Flow rates vary with water temperature:

- Cold water: Lower flow rates may be sufficient.
- Warm water: Higher flow rates are required.

Density:

- KDF® media have a high density of 171 lbs/cu ft, requiring backwash flow rates approximately twice the service flow.

General Guidelines

Remove any backwash flow restrictors to ensure optimal flow.

Do not restrict pipe size leading to the drain, as unrestricted flow is critical for effective backwashing.

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	1.00	16	171.0	1.04	3.0
15	14x65			30	1.00	18	285.0	1.60	5.0
20	16x65			40	1.50	20	399.0	2.33	7.0
25	18x65			50	1.75	22	627.0	3.50	11.0
36	21x62			72	2.00	24	855.0	5.00	15.0
45	24x72	Diaphragm nest	Hub and lateral	90	2.00	25	1140.0	6.50	20.0
72	30x70			144	2.50	25	1767.0	10.25	31.0
100	36x70			200	2.50	25	2565.0	14.75	45.0
144	42x73			288	3.00	25	3420.0	20.00	60.0
188	48x78			376	4.00	25	4446.0	26.00	78.0
324	63x86			648	5.00	25	7695.0	45.00	135.0



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Kymera International

220 Old W Penn Ave, Robeson, PA 19551

kdfsales@kymerainternational.com

(800) 437-2745



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.

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