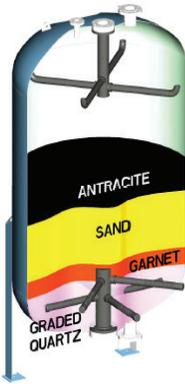


# Technical Tips: MFS Series

AVANTech's Technical tips are intended to be utilized as a design guide by engineers where utilizing standard and proven technologies is the most effective treatment.

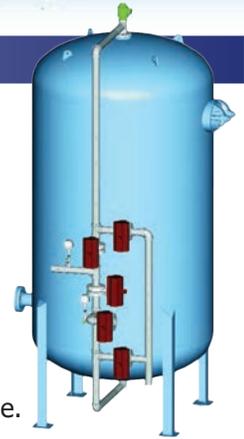
## Multimedia Filtration System (MFS)



**Application:** Removes turbidity and particulate and reduces the feedwater Silt Density Index (SDI). Removal efficiency, frequency of backwashing, and replacement of media depends on the type and quantity of contaminants to be removed. There are a variety of granular media filter configurations, including pressure systems, gravity systems, vertical vessels, horizontal vessels, single media, depth media, etc.

✓ **Influent Quality:** The feedwater should not contain more than 10 NTU turbidity, 5 color units, 5 ppm organics as oxygen consumed, 1.0 ppm iron and manganese, or 2 ppm free chlorine.

✓ **Effluent Quality:** Anticipated % turbidity removal will vary from 96% at 8 gpm/ft<sup>2</sup> to 70% at 15 gpm/ft<sup>2</sup>. Filters will remove 96% or more of all particles greater than 40 microns in size and 75% or more of particles from 5 to 35 microns.



## Media Selection

Multimedia Filters Systems (MFS) have a high loading capacity due to the reverse grading of the media. With the coarsest layer at the top and the finest layer on the bottom, the filter can retain particles as low as 5 micron or less. The MFS Series media is anthracite, filter sand, garnet, and graded quartz.

- ✓ Anthracite: Highly metamorphosed variety of coal and is a more fixed carbon about 90 to 98% with less than 8% of volatile matter making it the best media to effectively provide depth filtration.
- ✓ Filter Sand: Extremely effective filter media because of its ability to hold back coagulum or precipitates containing impurities. Filter sand size, angularity, and hardness are the important filter sand characteristics to ensure proper filtering.
- ✓ Garnet: Well known for its hardness and durability. It has a high specific gravity as well as its chemical and abrasive resistance makes garnet an ideal filter to provide surface filtration to 35 micron or less.
- ✓ Quartz Support: The lower strata of a filter bed, acts to support the filter media. The maximum efficiency, the support gravel must possess the necessary attributes of hardness and be rounded or nonangular. Correct gradation and sizing must be calculated to properly support the filter media.

## Design Parameters

Description	Range	
Service	5-15 gpm/ft <sup>2</sup>	1-6 gpm/ft <sup>3</sup>
Backwash	8-30 gpm/ft <sup>2</sup>	
Rinse	6/15 gpm/ft <sup>2</sup>	

### Optional:

Sub-Surface Wash	3-8 gpm/ft <sup>2</sup>	
Air Scour	3/5 scfm/ft <sup>2</sup>	@7.5 psig
Sanitizing	3-8 gpm/ft <sup>2</sup>	

Media	Depth	Size
Anthracite	18 in.	0.6-0.8 mm
Filter Sand	12 in.	0.45-0.6 mm
Garnet	6 in.	0.25-0.4 mm
Quartz	6 in. above dist.	graded

Steps	Valve Sequence	
Service	AV-1301	AV-1302
Backwash	AV-1303	AV-1304
Rinse	AV-1301	AV-1305

### Optional:

Sub-Surface Wash	AV-1306	AV-1304
Air Scour	AV-1306	AV-1304
Sanitizing	AV-1307	AV-1307

## Notes

Optional steps are not required on all applications. Sub-Surface Wash and Air Scour are the same step where one uses water while the other uses air.

