

Filtration Media – AFM Activated



AFM[®] Activated Filter Media is a direct replacement for sand as a sediment removal filtration media, doubling the performance of sand filters without the need of additional investment in infrastructure. AFM[®] resists biofouling, bio-coagulation and transient wormhole channelling of unfiltered water through a filter media bed.

AFM[®] is a highly engineered product manufactured from a specific glass type, processed to obtain optimum particle size and shape. It is then exposed to a 3-step activation process to increase its surface area by up to 300 times for superior mechanical and electro-static filtration performance.

AFM[®] Benefits at a Glance

- More than doubles the performance of an existing filtration system
- Is not subject to biodynamic instability and will never allow untreated water to pass
- Substantially lowers chlorine oxidation demand
- Lowers backwash water volume requirement by an average of 50%
- Long in-service life- AFM[®] is expected to last for the life of the filtration system

Applications

- Drinking water treatment: Removal of ferric, manganese, arsenic, chromium, TBT and a range of heavy metals and priority chemicals
- Filtration prior to membranes and desalination: filtration performance at least twice as good as sand, in most cases the SDI (Silt Density index) will be reduced to under 3.
- Swimming pools, water parks and large-scale lido systems
- Aquarium Life Support systems for marine and freshwater systems
- Tertiary treatment of municipal and industrial wastewater, AFM does not biofoul

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What Makes AFM® so Effective?

- **Clean, carefully selected glass.** AFM® is only made from pure container green glass which has the necessary metal oxides to help make AFM® self-sterilising.
- **Ideal hydraulic properties.** The raw material is ground into the optimal grain size and shape that is crucial for the outstanding hydraulic characteristics of AFM®. No dangerous glass splinters are present in the filter material. The complete manufacturing process is ISO certified.
- **Activation process.** The AFM® activation process creates a mesoporous structure with a huge catalytic surface area. Sand has a surface area of 3,000 m² per m³ but AFM® has a surface area up to 300 times greater for adsorption and catalytic reactions. Hydroxyl groups on the surface give AFM® a strong negative charge (zeta potential), that attracts heavy metals and organic molecules. In the presence of low concentrations of oxygen or oxidising agents (ozone, sodium hypochlorite and similar), the catalytic surface generates free radicals that make AFM® self-sterilising.



AFM® activation is a patent (Dryden Aqua®) protected 3-stage process during which the surface structure of the glass is changed at a molecular level. Glass is an aluminosilicate; the AFM® activation process uses the existing properties of the starting raw material by:

1. Increasing its catalytic properties
2. Controlling its surface charge density
3. Increasing its surface area

Testing

- AFM® performed the best in tests conducted with a range of filtration media, more than twice as good as sand or any of the crushed glass products. It is easy to remove large particles, but it is the sub 5 micron that are difficult to remove and in this particle size range AFM® excelled.
- In testing, no other glass media backwashed within 6 minutes, the best still retained 8 % of solids, and the worst retained 20 %. This translates to a significantly higher water requirement for backwashing and a higher chlorine demand resulting from retained organic matter.
- The chemistry of the glass, the particle shape and especially the activation process give AFM® the important properties to clearly out-perform sand and glass sand filter media. The large surface has a strong negative charge to adsorb organics and small particles. The surface also has metal oxide catalysts which produce free radicals and thus a high redox potential. This makes AFM® self-disinfecting. AFM® prevents bacteria from settling and colonising the filtration media to make AFM® a unique, bio-resistant filter material.