

# DI-tech Specialty Media for Fluoride and Arsenic Removal NSF Certified

## Activated Alumina Pre-Conditioned for Higher Selectivity

*DI-tech Activated Alumina is a pre-conditioned (acidified) granular aluminum oxide used for residential and industrial feed waters to reduce arsenic and fluoride levels. DI-tech Activated Alumina receives a special acid washing treatment to lower the internal pH of the raw media. Both arsenic and fluoride removal are negatively impacted by high pH. DI-tech Activated Alumina is based on a raw product that is NSF-61 listed and represents a BAT (Best Available Technology) by the US EPA.*

### Physical and Chemical Properties

|                           |  |
|---------------------------|--|
| Media Structure:          | Acidified Granular Aluminum Oxide media.           |
| Functional Groups         | Oxide (hydroxyl)                                   |
| Ionic Form as Shipped:    | Slightly Cationic                                  |
| Physical Form:            | White grains                                       |
| Total Capacity            | 1.5-2.0% by weight                                 |
| Screen Size Distribution: | 14x28 Tyler Mesh<br>16-30 US Standard              |
| Uniformity Coefficient    | 1.3 (max)  |
| Surface Area              | 380 m <sup>2</sup> /gm                             |
| pH Range Stability        | 5-9 operating                                      |
| Temperature Range         | 40-180°F (5-80°C)                                  |
| Shipping Weight:          | 40 lbs per cubic foot                              |
| Packaging                 | 28.32 liter (1 cu ft) boxes<br>5 cu ft fiber drums |
| Also Available            | 28x48 (30-50 mesh)                                 |

### Grade Information

**DI-tech Activated Alumina** is a frequently used media in municipal water treatment for the removal of arsenic and fluoride. It is listed by the US EPA as a BAT for these uses. As a raw product, activated alumina contains Na<sub>2</sub>O (sodium oxide) which converts to NaOH (sodium hydroxide) in water producing a very high pH and rendering its capacity to near zero. Regeneration is with caustic and acid so the media must be pre-conditioned before use unless the user has the ability to handle those harsh chemicals. **DI-tech Activated Alumina** is listed as **NSF-61** for safety.

### Safety Information

A material safety data sheet is available for DI-tech Activated Alumina. Copies can be obtained from Systematix Company (fax 714-522-5443). DI-tech Activated Alumina is not a hazardous product and is not WHMIS controlled.

### Regeneration and Pre-Treatment

**DI-tech Activated Alumina** can be field regenerated using first, a dilute solution of NaOH to strip the arsenic and fluoride. The media is then rinsed with feed water and the neutralized with a dilute solution of H<sub>2</sub>SO<sub>4</sub> or HCl followed by a full rinse with clean water. Regeneration details are available from Systematix Co.

### Optimizing with Pre-Treatment

Activated alumina capacity reduced by high pH (above 8.2) and bi-carbonate alkalinity (above 50 ppm) in the feed water. In such cases, pre-treating the feed water with a salt regenerated strong base anion (SBA) resin (a dealkalizer) will both reduce the pH AND the alkalinity. In addition, SBA resin has a modest capacity to reduce the arsenic and fluoride content of the feed stream, prolonging the capacity and life of the alumina polisher.

### Design Conditions

Optimal flow conditions in use are 1.5-2.5 gpm/cu ft of media. Higher flows with minimal retention time will reduce capacity and increase average leakage. Backwashing is done at 10 gpm/sq. ft. for 10 minutes every 4-7 days.

A single family home might use 120,000 gallons of water/year...about 1 million pounds. Capacity of 1.5% means a cu ft. (40 lbs) of AA can remove 0.6 lbs of contaminant. At 1.2 ppm of fluoride, this is about 50,000 gallons.

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