

SORB 09™ FLUORIDE REMOVAL SYSTEM

Treat fluoride contamination in ground water supplies.

The SORB 09 system treats a wide range of water qualities at capacities ranging from 50 to 3,000 gpm. The SORB 09 system features a small footprint and enhanced operation as compared to conventional activated alumina adsorption systems.

The SORB 09 system is an automated fixed bed adsorption process that removes fluoride onto a solid activate alumina surface. SORB 09 is a regenerative process using a weak caustic soda solution to remove fluoride from the solid activated alumina, extending the treatment life of the material.

The SORB 09 process reduces the amount of regenerant by 25 - 40% per cubic foot of activated alumina in process via our unique algorithm flow pacing software.



For more SORB 09™ Fluoride Removal System visit www.denora.com



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SORB 09™ Fluoride Removal System

Benefits

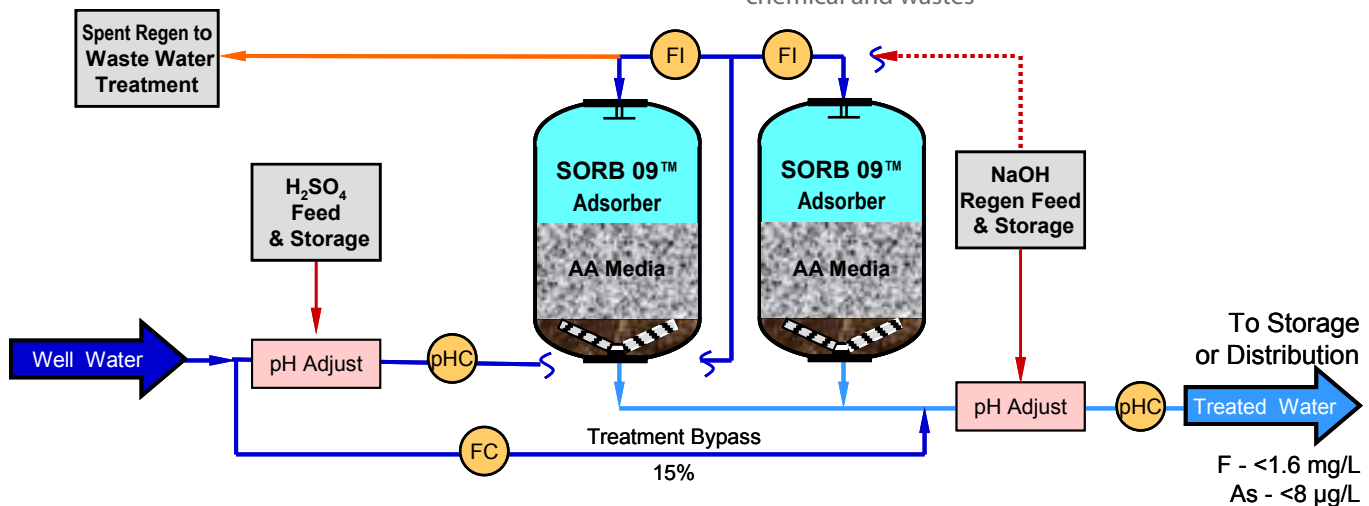
- Excellent water quality
- High chemical efficiency
- Short regeneration time
- Simple design, construction and control – easy to control and automate
- Self-cleaning
- Insensitivity to product flow variations and stops
- Ideal for upgrades or expansion

Process Description

Some of the contaminated well water flow is fed downward through two or more adsorption vessels operating in parallel. Some water bypasses treatment and is blended to meet an effluent water quality well less than the secondary MCL of 2 mg/L. The volume of water treated in each adsorber is totalized. When the volume approaches the fluoride breakthrough point, the adsorber is taken off line and regenerated with caustic to remove adsorbed fluoride from the activated alumina and into a spent brine solution. Regenerated activated alumina is then rinsed of caustic, conditioned with weak acid and returned to the adsorption vessels for service in another cycle.

De Nora Water Technologies offers unique process enhancements in the SORB 09™ system design that are not found in conventional activated alumina processes.

1. **pH reduction of feed water** – flow pacing is used to control acid feed flow in proportion to the feed water flow, a more reliable control mechanism. pH feedback is used to trim acid flow as needed to maintain the target pH. Flow pacing makes the process more consistent.
2. **F adsorption** – an algorithm is used with a feed water F level input to determine the volume of water treated per cycle.
3. **pH readjustment & blending** – flow pacing is used to control caustic feed flow in a similar manner to that used for pH reduction. Target effluent pH is set high enough to prevent corrosion as determined by its langelier index, the point at which the water is no longer corrosive. This reduces caustic usage by not targeting the water's ambient pH.
4. **Media regeneration** – The process uses flow pacing with a proprietary algorithm to determine the correct chemical feed for effective media regenerated. This ensures efficient but adequate use of expensive chemicals and control during fast rinse and neutralization steps.
5. **Unique side entry regenerant distributor and media flushing** – ensures effective system control and balance of chemical and wastes



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