

Resin Fouling — Organic Fouling (Severe) of Anion Resins

Organic materials are present in most surface water supplies. The fouling of anion ion exchange resins by these organics cannot be predicted accurately because they vary widely in nature.

Naturally occurring organic acids, which result from the decomposition of vegetation are the chief offenders. Most of these substances will foul anion resins (strong base and weak base). Also, they have a tendency to leak through the anion resin bed, decreasing the pH and lowering the resistance of the effluent. As they build up, flow rate and temperature sensitivity increase, operating capacity decreases, and rinses become longer.

For severely fouled anion resins, the following cleanup procedure can be used:

1. Backwash the resin thoroughly and proceed through a normal regeneration.
2. Apply 2.5 pounds of sodium chloride per cubic foot of resin as a 140°F, 10% solution at a rate of 0.5 gallons per minutes per square foot.
3. Rinse downflow at 2 gallons per minute per cubic foot of resin with 140°F water for 20 minutes.
4. Allow the bed to cool to at least 120°F.
5. Apply 2 bed volumes of 0.25% sodium hypochlorite as an alkaline solution (pH 9.9-9.5) over a 1 hour period, agitating with air if possible.
6. Rinse with 140°F water until chlorine in the effluent is below detectable limits and repeat Step 5 if necessary.
7. a. For Demineralizers: Perform the regular regeneration twice using caustic.
b. For Organic Traps: Perform the regular regeneration twice using brine.
c. For Dealkalizers: Perform the regular regeneration twice using brine/caustic.

