



## **DOWEX™ Ion Exchange Resins**

Procedure for Treating Polyelectrolyte Contamination of a Cation Resin by Caustic Cleaning

### **Procedure**

Caustic treatment can be used for removing polyelectrolyte contamination from the pretreatment process that has accumulated on the cation resin. If such contamination occurs, the dosage and effectiveness of the pretreatment filtration should be checked. Note that the resin can become sticky if the level of contamination is high, so backwashing and air injection are recommended to help de-clump the resin.

The detailed cleaning steps have to be adapted to each regeneration process (coflow, different types of counterflows).

Used, mechanically weak resins, may suffer from large osmotic (fast swell/shrink) and mechanical (air scrubbing) strains. It is advisable to use gradual changes in solution concentrations and to minimize the mechanical stress.

The recommended procedure is as follows. The caustic concentration should be increased gradually to avoid excessive osmotic stress to the resin:

1. Regenerate the resin to remove the hardness.
2. Lower the water level down to 10 cm above the resin level.
3. Air brush the bed at 50-80 m/h for 15 minutes.
4. Backwash the bed at maximum expansion for 15-30 minutes.
5. Pass upflow 2 bed volumes of a 1% NaOH solution at a contact time of 30 minutes.
6. Pass upflow 1 bed volume of a 4% NaOH solution.
7. Leave to soak for 4-16 hours with occasional air injection to facilitate contacting of the caustic with the resin.
8. Displace/rinse the caustic downflow with a minimum of 5 bed volumes DI water.
9. Backwash the resin and then carry out a double regeneration (same acid concentration at double the injection time).

Note: WAC resins will swell >60 % when converted from the H<sup>+</sup> form to the Na<sup>+</sup> form.

**DOWEX™ Ion Exchange Resins**  
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Warning: Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

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