RESINTECH INC
INNOVATIONS IN ION EXCHANGE

TECHNICAL DATA SHEET

BRINE ELUTION STUDY

An elution study measures several variables during the regeneration of a water softener. These variables are recorded over time and allow an evaluation of the performance of the ion exchange equipment.

The materials needed for a brine elution study are a graduated cylinder and salometer for measuring brine concentration, a flow meter for measuring flow rate, and a stop watch to measure the time.

Once the regeneration has started, the salt concentration and brine flowrate are recorded at regular time intervals. Data collection continues until the end of the brine displacement step. After the data has been gathered it is easily analyzed. The percent of sodium chloride is directly related to the pounds of salt per gallon of solution. This taken in conjunction with the time and the flowrate allows one to calculate the total pounds of salt that has gone through the softener.

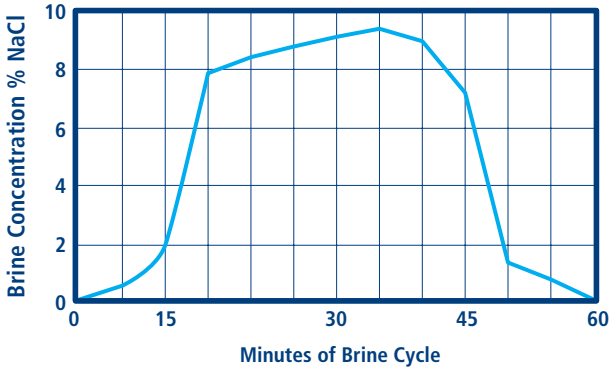
The total pounds of salt, divided by the number of cubic feet (cf) of resin, equals the effective regenerant dose. This simple analysis can then be related to a theoretical calculation of the softener's capacity.

Theoretical capacity is a relatively easy number to obtain, based on the total hardness loading (grains per gallon) and the design operating capacity of the water softener. Standard water softening calculations tell us that at 15 lbs/cu. ft. of sodium chloride, the operating capacity is 30 kilograins/cu. ft.

The brine elution data is usually charted onto a graph, with time on the x-axis and percent brine on the y-axis. In graph form it is easy to see if the brine solution was applied onto the resin at the proper concentration and for the right amount of time. Applying a brine solution at a minimum strength of eight percent for a minimum contact time of twenty minutes suffices.

Comparing actual data versus engineering calculations can help identify problems with either the resin or the equipment. Resin that is fouled with iron may give short runs even though the correct dose of salt has been applied. On the other hand, equipment problems, such as insufficient brine draw, can cause the softener to exhaust prematurely.

*Below is an example of an elution curve.



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