

# The TREND

Published by  
International Chemtex Corporation  
2008 Volume 7

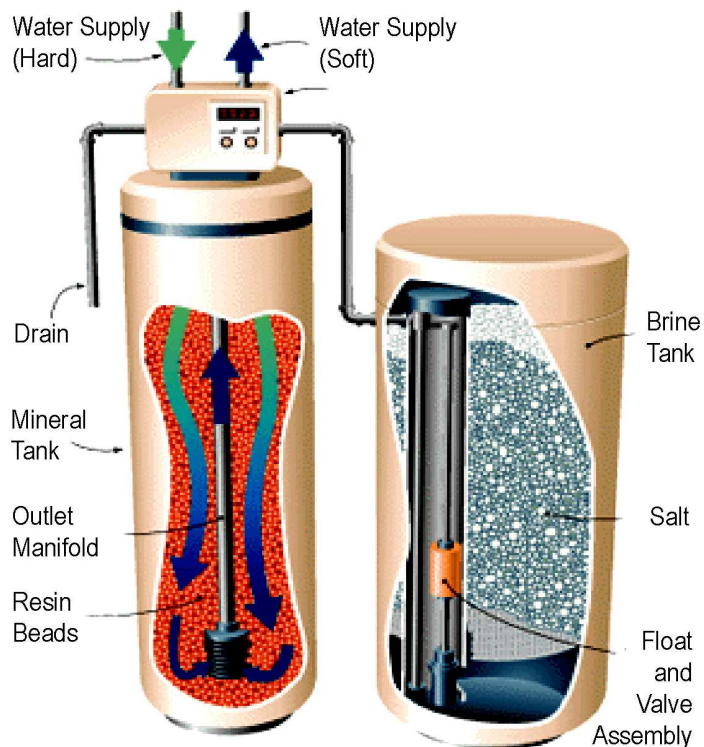
## ION EXCHANGE RESIN CLEANER

- ◆ It's not too late to make your reservation for the 2008 Chemtex National Sales Meeting. But don't wait too long—reservations to Shawn by March 1! The agenda will include presentations on Dolphins and other "gadgets," Legionnaires Disease Update, the Chemtex IC Panel, a new "Green" program, a Homeyer Consulting review and many other items.
- ◆ 2008 marks Chemtex's 30th anniversary! Throughout the year we will celebrate our 30 years of "Serving Water Treatment Needs in Industry."

### Watch For:

- ◆ The next issue of *The Trend* discusses the various BART™ tests and introduces some new BART™ procedures you probably didn't know existed. These valuable tools expand our lab's microbiological detection and analysis capabilities.
- ◆ Many companies are becoming more environmentally aware and are "going green." Chemtex is on the leading edge of this movement with its new Green Program—watch for the introduction soon!

The quality of boiler feedwater is crucial to a successful internal boiler water treatment program.



Softening the make-up water is an integral step in achieving the desired water quality. Sodium zeolite softeners are a common fixture in boiler rooms, although many people don't exactly know what happens inside.

Understanding the operation of a water softener and supplying a maintenance product such as

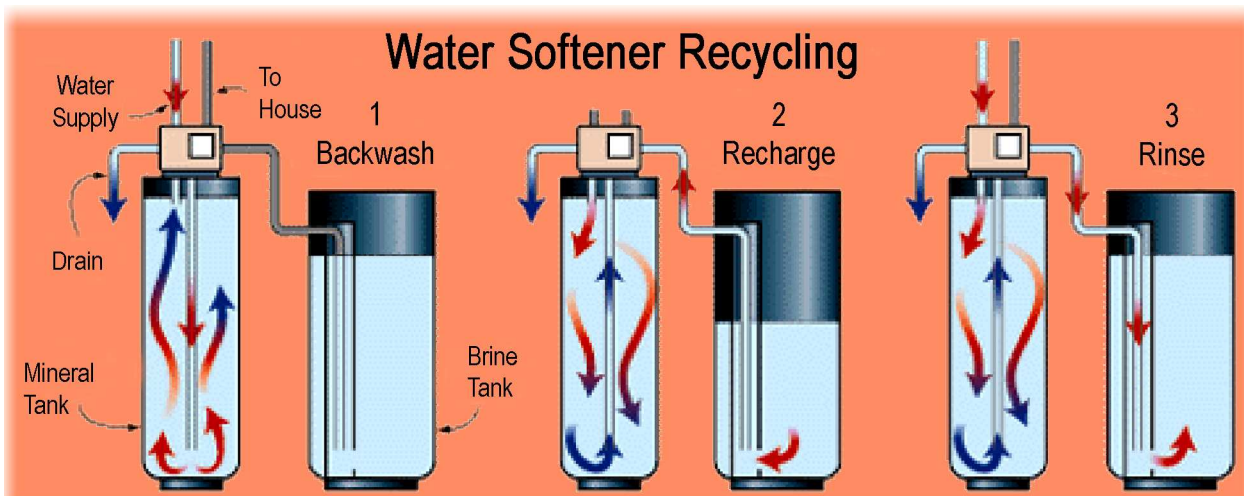
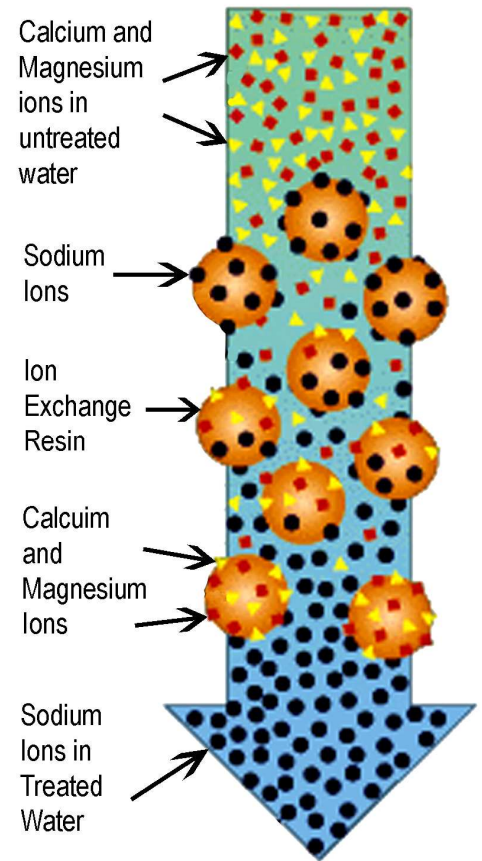
## Resin Cleaner

provides a value-added benefit to your customer.

**CHEMTEX**  
INTERNATIONAL CHEMTEX CORPORATION

8287 - 214<sup>th</sup> Street West  
Lakeville, MN. 55044  
(952) 469.4965

Calcium (Ca) and magnesium (Mg) are naturally occurring elements that, when combined with carbonate and other anions, can form scale in the boiler system. Sodium (Na) zeolite softeners exchange these calcium and magnesium ions with sodium ions that are much more soluble and far less likely to cause scaling in the boiler. This exchange is done by passing water through cation exchange resin beds having sodium as the exchangeable ion. The resin has a much higher affinity for the Ca and Mg ions and are easily and instantly exchanged for the Na ion, producing a soft water effluent. This process continues until the resin bed is completely saturated with Ca and Mg ions and the resin requires regeneration with Na ions. Although the resin prefers the Ca and Mg ions, it will accept the Na ion if the concentration of Na ions is high enough, such as in a brine solution.



Regeneration includes four cycles—backwashing, brine injection, slow rinse and fast rinse. Backwashing pushes water up through the resin bed, redistributing the resin beads and removing dirt, debris and broken beads. Brine injection and slow rinse recharge the exchange sites with sodium ions. Fast rinse removes the excess brine, mostly chlorides, from the resin bed.

Proper regeneration is crucial to maintaining a soft water feed to the boiler and keeping the resin beads in good physical condition.

Resin related problems are most commonly physical breakdown, increase moisture holding capacity, loss of chemical functionality and iron fouling.

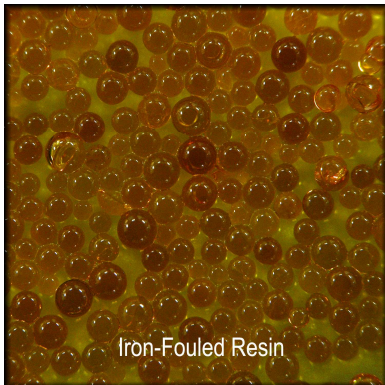
Physical breakdown is determined by microscopic inspection. Over time, make-up water conditions such as chlorination can degrade the resin beads. Pressure and forceful backwashing can also cause beads to crack. A whole bead count less than 80% is an indication for resin replacement.

Moisture holding capacity can give a good indication of the remaining physical life of the resin. High moisture content is most likely due to oxidative attack, such as chlorination. Oxidized resin is soft and less dense, as the bead is absorbing more moisture.

Moisture contents nearing 60% should be considered for replacement.

Loss of chemical functionality is measured as salt splitting ion capacity or meq/gr. Iron, manganese aluminum, oil and grease are common foulants that can coat the resin beads or occupy the exchange sites, preventing the removal of Ca and Mg ion from the water. This will also shorten the time between regenerations.

Iron is one of the most damaging foulants to a softener resin bed. Iron exchanges with Na ions just as easily as Ca and Mg and will form a hard coating on the resin bead that may not be removed by backwashing or regeneration. This can lead to physical degradation of the beads and loss of chemical functionality. In most cases, iron fouling can be solved by chemical cleaning.



Iron-Fouled Resin

Chemtex Resin Cleaner is specifically designed to prevent the accumulation of metallic oxides, silt, and other suspended matter that collects in the ion exchange resin beds. Resin Cleaner can be used to clean severely fouled resin or also used for maintenance purposes. Dosages range from 1 quart to 1 gallon of Resin Cleaner per cubic foot of resin.

Laboratory analysis of resin includes iron fouling, moisture content, bead count, salt splitting ion capacity and microscopic photographs of the resin beads. An eight ounce sample of resin is necessary for a complete analysis. Use a PVC pipe extended into the center of the tank in order to collect a representative sample. Water should be added to the resin sample to prevent the beads from drying out.

A simple maintenance program will help keep a softener running at peak efficiency. Periodic tank inspection, laboratory analysis of the resin, and regular use of a Resin Cleaner will help to prevent problems such as scale, corrosion, boiler tube failure, and flow restriction. These and other problems caused by hard water cost business and industry millions of dollars annually.



Cracked Bead



Good Resin

**Cleaning  
Agent**

**Resin Cleaner**

**CHEMTEX**  
INTERNATIONAL CHEMTEX CORPORATION

*"An ISO Certified Company"*

## **Ion Exchange Resin Cleaner**

- Unit can remain on line
- Safe, low toxicity
- Liquid for ease of handling
- Economical

Chemtex Resin Cleaner is specially designed to prevent the accumulation of metallic oxides, silt, and other suspended matter which may collect in ion exchange resin beds. These accumulate during exchange by the natural filter effect of the resin bed. The accumulation drastically reduces the exchange capacity of the unit.

### **DOSAGE**

Dosages range from 1 quart to 1 gallon of Resin Cleaner per cubic foot of resin per application. Serious problems may require a special analysis.

### **FEEDING**

Chemtex Resin Cleaner can be fed directly to the brine tank as received. Consult your Chemtex Representative for best procedure.

### **PRODUCT DATA**

<b>FORM:</b>	Liquid
<b>pH:</b>	1.4
<b>SPECIFIC GRAVITY:</b>	1.035

### **HANDLING**

Harmful if swallowed. Not for use in potable water. Avoid prolonged or repeated contact with skin, or accidental eye contact. Wash from skin and clothing with water. In case of eye contact, flush eyes thoroughly with water and get medical attention if irritation persists. Keep container closed when not in use. Consult Material Safety Data Sheet for further safety information.

### **PACKAGING**

55 Gallon Drum - 30 Gallon Drum - 5 Gallon Pail

REV A

*"Serving Water Treatment Needs in Industry"*

8287 - 214<sup>th</sup> Street West • Lakeville, Minnesota 55044 • (952)469-4965 • FAX (952)469-1252