

## Scale Removers

Remove Lime Scale from cooling towers and evaporative condensers using the industry's most trusted and effective products, selecting from Liquid Scale Dissolver, the economical, easy-to-use liquid or Season Start, the popular "Imperial Grade" powder.



4330-08

4330-88

- Liquid hydrochloric acid
- 1 gallon dissolves 3 lbs. of scale
- Strong and fast... dissolves iron oxide too
- Easy-to-use liquid requires no pre-mixing
- Contains low-foaming corrosion inhibitors
- Built-in pH color indicator



4360-88

- Powdered Sulfamic acid
- 2 lbs. dissolves 1 lb. of scale
- Contains best inhibitors available for all metals, including galvanizing
- Non-volatile... gives off no obnoxious fumes
- Built-in pH indicator

Both products feature Nu-Calgon's exclusive pH color indicator, a feature that lets you see when the job is done. In addition, the liquid product features the safer low-foaming characteristic.

### pH Color Indicator

Nu-Calgon's exclusive "built-in" pH color indicator tells you when to add more acid and it lets you see when the system is clean. At working strength, the acid cleaning solution is green or light blue. When the acid solution is neutralized and is no longer working, it turns purple and more acid must be added. The system is clean when the green color is retained for 20-45 minutes.



Neutralized



Working Strength

### Low-Foaming Performance

To demonstrate its greater emphasis on low-foam properties, Liquid Scale Dissolver was added to a beaker containing lime scale. A leading competitive liquid product was added to another beaker containing an equal amount of lime scale. The difference is dramatic. When cleaning towers and evap condensers, low-foam is the preferred approach as high foam is both dangerous to personnel and surroundings and it represents wasted acid.



Competitive Product with Dangerous Foam

Nu-Calgon Low-Foaming Product

## **Season Start**

Shut off bleed and makeup water.

Drain Sump. Scrape or hose down loose scale and algae from slats or coil. Flush out all loose sediment from sump.

Fill system with fresh water.

As a starting dosage, use 10 pounds of Season Start for each 50 gallons of water in the system. If the amount of water in the system is not known, the starting dosage can be estimated from the following chart:

<b>Capacity of System in Tons/Horsepower</b>	<b>Initial Dosage of Season Start</b>
<b>10</b>	<b>10 lbs</b>
<b>20</b>	<b>20 lbs</b>
<b>30</b>	<b>30 lbs</b>
<b>90</b>	<b>75 lbs</b>

The recirculating water will be "green" or "light blue" in color for proper strength. When the solution turns "deep blue" or "purple", more Season Start is needed. Add another dose equal to the first. Continue to repeat this process until you can maintain the cleaning solution at the proper strength (green color) for 20-45 minutes. Completely flush the system after every third addition of product. If the system contains a lot of dirt, rust, algae etc. so that the color indicator does not show up well, pH litmus paper may be used to double check the strength of the cleaning solution.

Drain and flush out the sump again, removing all Season Start solution and also dirt and silt that may have been loosened.

Fill the system with fresh water and open bleed.

The clean system should now be treated with Nu-Calgon's Wholesaler Season Treat (4364-88), the one-time tower treatment for the prevention.

## **Liquid Scale Dissolver**

**Will safely descale copper, steel, iron, brass, wood, rubber and plastic equipment.**

Drain water from sump and flush out system to remove loose scale and sludge.

Fill system with fresh water adding one gallon of Liquid Scale Dissolver for every 20 gallons of water in the system. Allow acid to recirculate until all scale is removed. At first the strong acid solution will be green. A blue or purple solution indicates that all of the acid has been neutralized by reacting with the lime scale and another dose of Liquid Scale Dissolver is needed. After every third addition of acid, flush the system and add fresh water before dosing again.

The system is free of scale when the solution retains green color for 15-30 minutes. (If it is not possible to observe the solution color, use the pH test strips, included with the package to determine whether the solution has been neutralized.) (Do not leave Liquid Scale Dissolver in the system longer than necessary to remove scale build-up and never longer than 6 hours.)

After cleaning, thoroughly rinse system with flowing water, making sure any residues from the process have been thoroughly flushed.

**Warning: Liquid Scale Dissolver may damage stainless steel and aluminum or remove the zinc from galvanized metal. Use Season Treat for these metals or when system metals are not known.**

