I-SOFT®

Methods Of Removal of Permanent Water Hardness

Part - II

See Part – I for Treatment of Temporary Water Hardness

-by Deepak Chopra
**Part II**

**TOTAL WATER HARDNESS**

Temporary Water Hardness can easily be removed by **FILTERSORB SP3**.

On the reaction,

Calcium/Magnesium bicarbonate shifts to the right as explained in the previous presentation (Part I)

\[
{\text{Ca(HCO}_3\text{)}_2} \xrightarrow{\text{FILTERSORB SP3}} \text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2
\]

Formed Crystals are water insoluble and no longer produces Hardness.

Permanent Water Hardness can be removed by addition of 

I for rest hardness stabilization

SOFT for corrosion control.
I-SOFT® is a Trade name of a Complex Salt. *It* is used for Softening Water Hardness and to Control Corrosion.

I-SOFT®, *it* ionizes to complex all Anions in water.

**Introduction:**

Watch® is the *only* producer of INSTANT complexing Agent. In addition to the I-SOFT® (complex), we also offer corrosion inhibitors, Biocides, Oxygen Scavengers, Cleaning agents, Descalers and strong Oxidizers – and all of these products are biodegradable!
Watch® does not supply Phosphates, EDTA, NTA, Phosphonates or Complexing agents which are not Biodegradable.

The performance of the I-SOFT® Instant type is much higher and the biggest Advantage for customers is not to buy 95% of expensive water, which involves higher transport costs and handling costs. It solves the problem of storage as well.

The excellent ecological and toxicological properties of the I-SOFT® Types have been regularly confirmed by over 2500 customers worldwide. Watch® therefore recommends the I-SOFT® as replacement for other, less environment friendly complexing agents, such as Phosphates, Phosphonates, Ion-Exchange Cations, Anions and Silicates etc.
Worldwide Watch® Water team of experts are always pleased to give advice on adapting formulation for the following applications:

- Drinking Water
- Process water
- Heating Equipments
- Heat Exchangers
- Air Conditioners
- Cooling Towers
- Boilers
- Steam Boilers
- Membrane Systems
- Anti-Scalants
Chemical Stability:
Formulation’s that contain I-SOFT® as complexing agent remain chemically unchanged during transport, storage and dilution, in order to be able to deliver the full potential. This ensures that all Watch formulations that contains I-SOFT®, remain effective over long period of time.

pH stability:
- I-SOFT® boosts the performance of highly alkaline formulations
- I-SOFT® can easily be employed in all acidic formulations
- I-SOFT® does not decompose even at extreme pH
- I-SOFT® formulations are resistant of being broken down in the whole pH range between 2 to 14, even at elevated temperatures.
I-SOFT : Corrosion Control

The I-SOFT® stabilizes all Ployvalent metal ions, which means that they can increase the rate at which the metals dissolves. Corrosion is decreased immediately if the pH is in the alkaline range and can be eliminated completely if I-SOFT® contains Oxygen Scavenver as addition, both in Hot Water Boilers and Steam Boilers.

- I-SOFT® NO – Non-volaitile Oxygen scavenger
- I-SOFT® VO – Volatile Oxygen scavenger

Both these I-SOFT® types are in alkaline range, which is the optimum pH range for the boilers that stops corrosion, neutralizes any kind of hardness and saves all the cleaning with acids.

Advantages: Solutions that contain I-SOFT® are much less corrosive to aluminum if their pH is adjusted to 5 – 7. One of the biggest advantage to soften water and stop scale and corrosion is that I-SOFT® contains a very low content of chlorides.
**Phosphates: The Chemical Time Bomb!**

*Phosphate contained products are all*  

**Phosphate’s Chemical time Bombs**

Phosphonates, Phosphates, EDTA and NTA including water soluble polymers: ask for formulation from all other suppliers.

They all use these *time bombs* to prevent calcium carbonate from precipitating and forming Scales. All these substances act by temporarily delaying the onset of crystallization.

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**I-SOFT IS SO MUCH DIFFERENT**

Cations (+)  

Salts  

Anions (-)

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Because **I-SOFT®** prevents **salts** from precipitating and forming scale and at the same time sequestering all metal cations.
<table>
<thead>
<tr>
<th>Applications</th>
<th>Mode of Action</th>
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<tbody>
<tr>
<td>✓ Dispersing Agent</td>
<td>Dispersing agent such as <strong>I-SOFT®</strong> is very effective to prevent the formation of scale such as barium sulfate.</td>
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<tr>
<td>✓ Scale Prevention</td>
<td>Displaces the equilibrium by sequestering all metal cations</td>
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<td>✓ Corrosion Prevention</td>
<td>Strongly reduces the high concentrations of free metal ions to lower the solubility</td>
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<tr>
<td>✓ Stabilizing all <em>oxidizers</em>, <em>biocides</em> and other chemicals</td>
<td>Sequesters all reactive heavy metals (iron, manganese, lead, copper, zinc etc.) and stops the reactivity of metal ions in the presence of oxidizers like HOCl, Chlorine, Chlorine dioxide, Bromine, Peroxides and Hydrogen Peroxide.</td>
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Preparing concentrated
Solutions of all water treatment related

Formulations

I-SOFT® can be used to re-dissolve precipitated metals
salts and hydroxides. I-SOFT® can be used to remove old
inorganic scale formed from phosphates. The rate at which scales
dissolve depends on their crystal structure and age and on the
temperature. Old, dried-out scale has to be treated with I-SOFT®
for some time and we would recommend applying 5% solution like
for all other-

INSTANT DOSING PRODUCTS
Important Notice

We request to all water treatment companies keeping in focus that there is absolute need for phosphate, phosphonates, poly-acrylates and silicates to be replaced in all possible applications because of ever growing concern on phosphate compounds effect on Human, Earth, Aquatic life and Good Water Quality.

The solubility of I-SOFT® is excellent between the pH range of 2 to 14 and it is absolutely capable of replacing all PHOSPHATES & PHOSPHONATES EDTA & NTA
Another Important Information: Cations such as Calcium, Magnesium, Sodium, Potassium are always 50% part of phosphates. For example, Calcium Phosphate also forms scale which is most difficult to dissolve.

This type of Scale is encountered in applications such as

- Reverse Osmosis Membranes
- Hot Water Boilers
- Steam Boilers
- Cooling Towers
- Heat Exchangers

And all other applications where phosphate is present.

The I-SOFT® is an effective alternative to EDTA for removing Calcium phosphate scale. Other than the Best Performance of I-SOFT®, this is by far the most readily biodegradable.

I-SOFT® is a High Performance Complexing Agent against Permanent Water Hardness
-Not Cations But ALL SALTS!

Thanks For Reading