

Alden Leeds, Inc.

Manufacturer of chemicals that care for your pool: Technical Document #5

METAL CONTROL TECHNIQUES

Soluble metal ions such as copper or iron can exist in water in three different forms. They are:

- 1) Unreacted ions. Colorless but ready to react in some manner such as oxidation.
- 2) Ions already reacted but not yet precipitated. Colored water but not staining.
- 3) Ions already reacted and precipitated. Clear water but stained surfaces.

There are four different techniques used to control metals depending on their state as shown above. The control techniques are:

- 1) Chemical chelators or sequestrants
- 2) pH control. The use of acids or alkalis
- 3) Chemical reduction. The use of strong anti-oxidizers
- 4) Chlorination or oxidation

Chelators and sequestrants - chemically coat ions in any of the three states. Effectiveness varies based on pH, sanitizer level, calcium level, depth of stain and amount of stain.

An acid wash is an extreme example of pH control. Strong acid breaks the bonds of reacted ions and releases the ions to the unreacted state. Strong alkali such as sodium carbonate can bond with unreacted ions to form cloudy precipitates which can be easily filtered or flocced and vacuumed to waste.

Chemical reduction is the opposite of oxidation. It can be used effectively to reverse reacted iron either in the colored or precipitated states. Reduction brings the iron back to the unreacted state.

Under certain conditions chlorination or other forms of oxidation such as granular oxygen compounds or ozonation, are used to produce a cloudy precipitate that is easily filtered or flocced and vacuumed to waste.

Metal Control Products

Product Type	Trade Name Example
Chelator	Chonchelate, Metal
Chelator	Sequest, Stain Off, Spa Demineralizer
Sequestrant	Conquest
Reduction	Demineralizer
Oxidation	Shock II, Sho2X
Chlorination	Hit Hard, More Chlor