

# Supplemental Corrosion Inhibition with Silicates

Sodium-silicate is a physical treatment/ NCD-compatible supplemental corrosion inhibitor for customer's desiring enhanced general corrosion inhibition or, they can be applied when certain physical limitations exist for an operating system – without the negative drawbacks of traditional chemical inhibitors.

**NCD Corrosion Control Overview:** Good general corrosion inhibition with physical treatment NCD's is usually dependent on having sufficient concentrations of calcium & carbonate-alkalinity following the formation of a calcium-carbonate, scale-preventing powder. Most NCD treatment programs are able to maintain good general corrosion resistance by operating at increasing the concentration of all the minerals and salts in the water while still preventing scale formation.

**Potential System Limitations to Cycling:** In select geographies, there are situations in which very high cycles of concentration can be limited – usually by one or more of the three following factors:

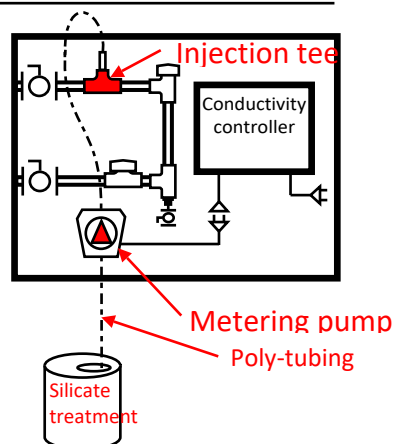
- Calcium or carbonates are initially low in the makeup water,
- the ability to concentrate chloride or sulfate salts in the makeup water is limited by the installed equipment's metallurgy,
- automatic filter backwash causes unnecessary water loss in the absence of sufficient evaporation to replace lost minerals.

**Enhanced Corrosion Inhibition with Silicates:** For Azure customers with any of the above conditions or for customers desiring to enhance corrosion protection on corrosion coupons for example, applying environmentally-safe sodium-silicates will maintain the “non-chemical” philosophy of the NCD application and not interfere with the NCD treatment signal.

**NSF/ Drinking Water & Stormwater Discharge Approvals:** Azure standard solution is a “technical grade”. Food-grade silicates are available upon request when necessary to meeting regulatory objectives.

Typical installation via an injection tee & metering pump

- Silicate can be injected downstream of the controller sensor assembly.
- Install a tee, reduced to 1/2” NPT, (and optional check valve before the tee).
- Azure will install a 1/2” injector to the tee and mount the metering pump if permitted by the installer.
- The metering pump will be actuated by a spare relay in the conductivity controller based on % of the system operating time.
- Containment tanks and pallets available.



## - SILICATES -

**Silicon is a natural element and is present in most municipal water as dissolved silica. In it's natural form, it's usually bound to other ions rendering it useless to combat corrosion in a cooling system.**

**Man-made silicate, “waterglass, poly-silicate”, in its pure form is able to bond with ferrous metal, ferrous oxide, as well as yellow-metals. It is sometimes used in municipal drinking water to deter corrosion and prevent lead leaching in distribution piping.**

**In a cooling system, it provides good to excellent corrosion deterrence, without interfering with the natural actions of NCD equipment. Its initial action is slow as compared to traditional inhibitors but this can be overcome through high initial dosing followed by the application of a low maintenance dose thereafter.**

**Unlike conventional treatments containing phosphate/ phosphonate, molybdenum, zinc, or amine, there are no toxic “metals”, additional additives, or byproducts to promote bacteria or algae growth while contaminating blowdown water.**

