Airable
RESEARCH LAB
WHERE SUSTAINABLE SOLUTIONS START

Scale Inhibitor for Commercial Water Treatment

Airable has developed a soy-derived scale inhibitor for commercial water treatment systems that prevents mineral deposition in high-stress treatment and distribution infrastructure. The formulation controls calcium sulfate and related mineral scaling at low use levels, maintaining flow efficiency and reducing energy demand. The inhibitor has notably higher bio-based carbon content than conventional phosphonate programs.

TECHNOLOGY

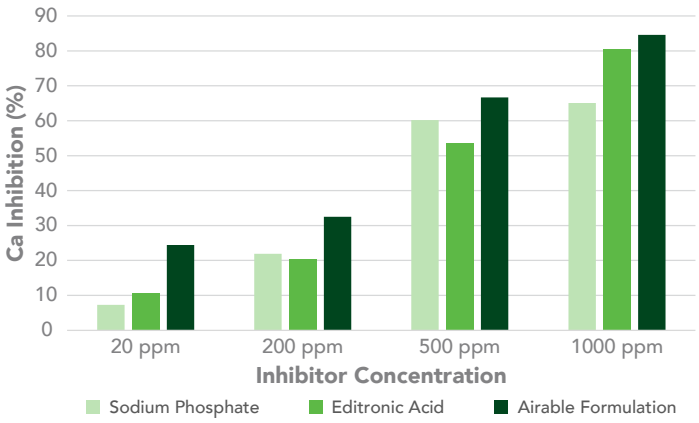
Airable's scale inhibitor is a soy-derived, phosphorus-functional chemistry designed to control calcium-based scale through threshold inhibition and crystal modification. The inhibitor adsorbs onto active crystal growth sites, disrupting nucleation and distorting lattice formation to prevent precipitation and scale deposition.

The formulation is effective at dosing levels as low as 20 ppm, remains stable at temperatures ≥ 120°C, and is fully miscible in water. The use of soy affords renewable carbon content, increasing the green proposition compared to conventional phosphate-based inhibitors while maintaining comparable performance.

HIGHLIGHTS

- Effective at low loading (20 ppm)
- Stable at temperatures ≥ 120°C
- Highly miscible in water
- Drop-in replacement for conventional formulations
- Up to 100% biobased carbon

TESTING



Samples were tested across varying concentrations. Following NACE Standard TM0374-2007, the testing determined the amount of $CaSO_4$ obstructed from precipitation compared to the theoretical yield. Percent (%) inhibition was calculated based on a sample without inhibitor. Airable's sample performs as well as editronic acid and sodium phosphate, the de facto industry chemistries.

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