

POLYSTABIL™ SCALE INHIBITORS

**Improved evaporator efficiency and
reduced operating costs**



- Reduced fouling and deposition
- Increased production
- Reduced energy costs
- Reduced downtime
- Shorter maintenance outages

Technology Overview

Polystabil scale inhibitors comprise a family of proprietary, liquid products that effectively control the formation of inorganic hard scales, or beer stone, such as calcium carbonate, calcium oxalate, calcium sulfate and barium sulfate. When used within a fuel ethanol plant, the scale inhibitors significantly reduce the potential for scale formation within evaporators, heat exchangers and associated piping, pumps and tanks. The continuous use of these products reduces the rate of scale formation and modifies the structure of the scale so that it is more easily removed, resulting in less frequent and shorter downtime for system cleaning and maintenance (up to 50% less time). The use of the products leads to increased production of ethanol and decreased steam usage, typically, within a few days.

Notably, Polystabil scale inhibitors start working at a dosage level below traditional polyacrylate chemistries and allow higher dosages, up to 22.6 ppm, while still meeting regulatory requirements, thereby making the scale inhibitors significantly more effective than conventional technologies.



Mechanisms of Control

Polystabil scale inhibitors utilize multiple mechanisms to control scale, including dispersion, sequestration, threshold inhibition and crystal modification. To prevent initial scale formation, the scale inhibitors nucleate small, scale-forming crystals in the bulk solution so that the crystals do not attach to and form scale on equipment surfaces (dispersion and sequestration). To slow and minimize scale formation, the scale inhibitors modify the surfaces of existing crystals so that new layers of scale do not form (threshold inhibition). For any scale that does form, the scale inhibitors disrupt the structure of the scale (crystal modification), making it softer and easier to remove.

Application Technology

For optimum results, Polystabil scale inhibitors should be applied as received and fed at a point in the process stream where thorough mixing will occur. For most applications it is recommended that the scale inhibitor be fed at the inlet of the thin stillage pump, the syrup transfer pump that feeds the evaporator where fouling is occurring, or both. For heat exchangers and process piping, the scale inhibitor should be fed prior to the point of scale formation. Unlike conventional technologies, the scale inhibitors can be fed using dual feed points.

Feed and Dosing Equipment

Automated feed and dosing equipment that is specifically designed for use with Polystabil scale inhibitors is available from Solenis. Use of this equipment is recommended because it automatically adjusts the feed rate of the scale inhibitor as needed to compensate for variances in the process.

Features and Benefits

Polystabil scale inhibitors contain no APEs or VOCs and are generally recognized as safe (GRAS) when coproducts from the ethanol process are used in livestock feed.

Commercial applications confirm that the scale inhibitors provide a number of value-added benefits, including:

- Reduced fouling and deposition
- Increased ethanol production
- Reduced energy costs
- Reduced downtime
- Shorter maintenance outages

More Information

For more information about Polystabil scale inhibitors, please visit solenis.com/scalecontrol.

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