

Verza360[®] Series

Bio-Based Iron Control Agents for Production and Midstream Applications

The Verza360[®] series (Verza) are organic acid-based iron control agents derived from plant-based materials. This series of blends enables high iron control and cost efficiency while providing a low carbon footprint to customers across the oil and gas industry. This series can be used as a complement to or replacement for traditional chelating agents, such as THPS, EDTA, and citric acid, offering wide latitude to achieve optimal performance in production and midstream saltwater disposal (SWD) applications.

Product Attributes

- High iron selectivity to prevent or remediate iron scales
- Provides anti-foulant properties
- Improves water quality and injection
- Reduces filter replacement frequency
- Improves oil-water interface & quality
- Non-toxic & biodegradable
- Locally and sustainably manufactured in USA using novel chemienzymatic process
- Enables lower overall chemical usage, treatment costs, and GHG emissions

Stability Constant

| Cation | Verza (T15 and G16) | Citric Acid | Na ₄ EDTA |
|------------------|---------------------|-------------|----------------------|
| Ca ⁺² | 2.2 | 8.1 | 15.0 |
| Fe ⁺³ | 37.2 | 11.2 | 25.0 |
| Mg ⁺² | 0.7 | 3.2 | 18.2 |

Verza T15 and G16 have a higher affinity for Ferric Iron than either citric acid or EDTA.

Preventing & Remediating Iron Fouling to Improve Water Injection

Case Study: Verza Saves Lost Time & Production via Iron Sulfide Remediation*

In a recent case study, an operator was experiencing daily fouling and plugging of an inline SWD filter due to the presence of iron sulfides (Before Verza). If left unabated, the plugging would increase inlet line pressures and potentially curtail ESP well production upstream.

Verza was proposed as a solution to remediate iron sulfides formation. As a result, Verza virtually eliminated the iron sulfides (After Verza), providing immediate resolution, a stable water injection operation, and saved lost time and production of high-producing wells.



Before Verza



After Verza

*Case study available upon request.

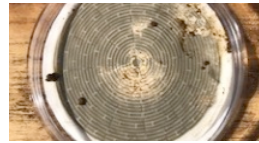


Enhancing Oil-Water Separation, Water & Interface Quality

Case Study: Verza Improves Oil-Water Separation on Emulsion Pad in Heater Treater Tank

In a field trial, an operator identified the presence of iron sulfide along with water and paraffin on an emulsion pad in a heater treater tank. Iron sulfides were contributing to high basic sediment and water (BS&W) content and affecting oil-water phase separation and filtration (Before Verza).

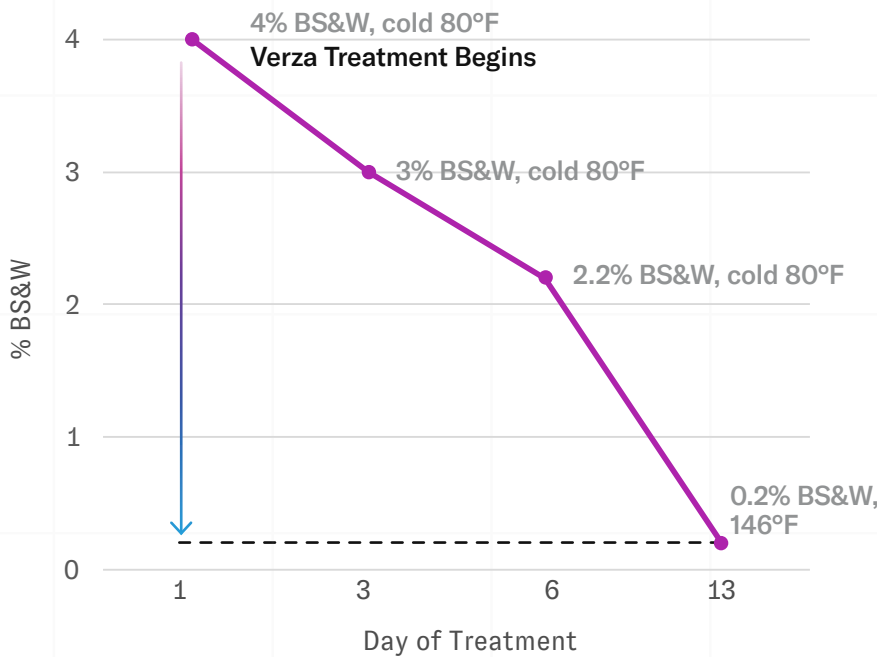
While not a substitute for an emulsion breaker, Verza was proposed as a solution to help remediate iron sulfide formation, enhancing oil-water separation and filtration (After Verza) and reducing BS&W (chart below).



Before Verza



After Verza



Verza enabled reduction of pre-existing iron sulfide, water, and paraffin pad from

4% BS&W to 0.2% BS&W

after 13 days.

About Solugen

Solugen is a bio-based specialty chemicals manufacturer and supplier whose mission is to decarbonize the chemical industry by revolutionizing the way chemicals are made for use across a variety of markets and applications.