

NuFlo® SIC-30

Technical Data Sheet

Scale Inhibiting Compound

Description:

NuFlo® SIC-30 is a high performance scale inhibitor developed to prevent Carbonate and Sulfate scales including Calcium Carbonate (CaCO_3), Magnesium Carbonate (MgCO_3), Calcium Sulfate (CaSO_4), Barium Sulfate (BaSO_4), Magnesium Sulfate (MgSO_4) and Strontium Sulfate (SrSO_4) scale deposits. **NuFlo SIC-30** Scale Inhibitor is a broad spectrum, high-Calcium tolerant, water soluble scale inhibitor which has been formulated to inhibit the formation and deposition of Carbonate and Sulfate scales in oil field brines.



Features:

- Scale Inhibitor is stable at temperatures up to 450°F, allowing it to be used where other products may be thermally unstable.
- Will complex with the Calcium, Magnesium, Barium and Strontium cations, impeding crystal growth and subsequent scale formation and deposition.
- Highly effective in controlling Barium Sulfate and Iron Hydroxide, as well as dispersing colloids and fine particles such as clay.

Mechanism for Action:

- Solubility enhancement or threshold effect which reduces precipitation of low solubility inorganic salts.
- Crystal modification which produces crystals which do not adhere well to surfaces.
- Dispersion activity which prevents precipitated crystals or other inorganic particles from depositing on surfaces.
- Buffering effect, which minimizes precipitation of inorganic salts and limits corrosion and formation of Iron Oxides.

Product Benefits

- Inhibits Carbonate and Sulfate scale formation in wells and pipelines
- Superior to conventional polymaleic acids, acrylate polymers and phosphonates
- Increases water solubility of Carbonate and Sulfate salts
- Remove/inhibits NORM rich Sulfate scales: BaSO_4 and SrSO_4

Physical Properties



NuFlo[®] SIC-30

BULK DENSITY	10.26 lbs/gal
SPECIFIC GRAVITY@ 20 C	1.23 + 0.05 g/cm ³
SOLUBILITY IN WATER	Complete
FLASH POINT (TCC):	>93 °C (>200 °F)
% VOLATILES BY VOLUME @ 21 °C (70 °F)	0%
VISCOSITY	1 mPas
pH	11.00
SOLUBILITY	
HIGH Calcium Waters:	Soluble
HIGH TDS BRINE:	Soluble
FRESH WATER:	Soluble
CRUDE OIL:	Insoluble

Application:

Scale Inhibitor may be applied by continuously injecting between 5 to 100 ppm of the product down the annular space of a producing well via sidestream bleeder arrangement, based on the total daily volumes of water produced. Other applications may include continuous injection into a header system upstream of a free-water knock-out or a heater treater, or upstream of a high-pressure pump in salt water disposal or injection system. Treatment rates should be optimized by closely monitoring scale deposition at control locations.

Batch treatments with **NuFlo SIC-30** Scale Inhibitor are successful in producing wells with sufficient annular fluid to act as a chemical reservoir which will provide a slow, continuous feed of inhibitor into the produced fluids. Normally, one or two batch treatments per week are recommended for effective scale control. **NuFlo SIC-30** Scale Inhibitor is not specifically recommended for use in formation squeeze applications due to its extended solubility.

Availability: 5-gallon, 55-gallon containers and 275-gallon tote-bins.

Storage: Keep out of direct sunlight. Keep from freezing. Store between 40-100°F.

This product is classified and labeled according to the Globally Harmonized System (GHS).

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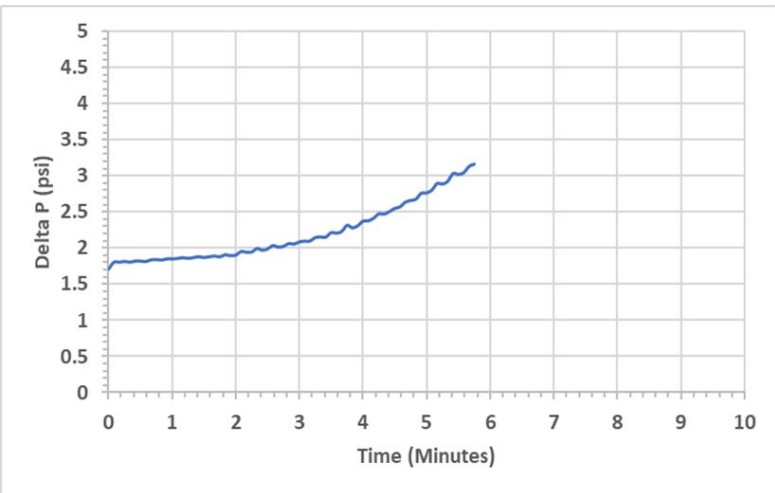
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About the Chemistry

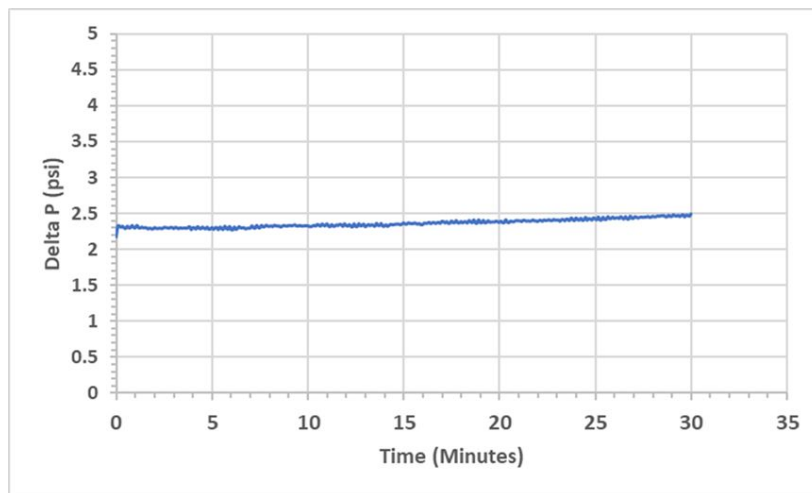


NuFlo[®] SIC-30 overcomes prior problems of other Carbonate and Sulfate scale inhibition chemistries by creating an inexpensive, effective metal Carbonate and Sulfate chelation, dispersion, and crystal modification solution that is incredibly effective at inhibiting metal Carbonate and sulfate scales such as Calcium and Magnesium Carbonate, Calcium, Strontium, Magnesium and Barium Sulfate. Using NACE cationic and anionic brines, NuFlo[®] SIC-30 has a minimum inhibitor concentration (MIC) of 25 ppm when used to inhibit Carbonate scales, and a MIC of 100 ppm when used to inhibit sulfate scales. NuFlo[®] SIC-30 contains built-in corrosion inhibition additives, as well as Iron control agents which prevent seeding of scales, and interference with the scale crystal modification mechanism.

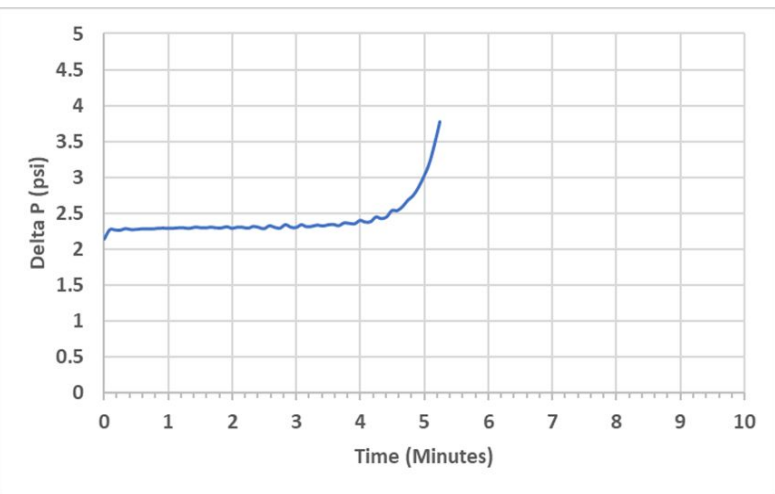
Carbonate and Sulfate Scale Inhibition - Dynamic Scale Loop Test Results



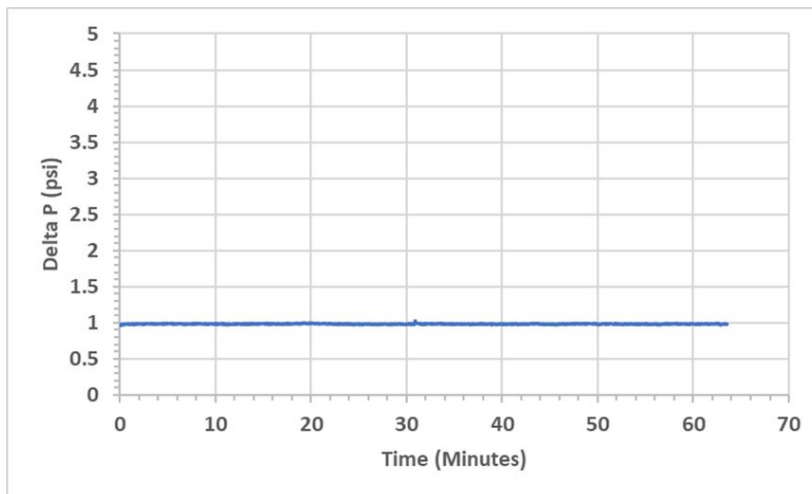
Results of Dynamic Scale Loop Test for Carbonate Scale Without Scale Inhibitor



Results of Dynamic Scale Loop Test for Carbonate Scale With 25 ppm NuFlo[®] SIC-30 Scale Inhibitor



Results of Dynamic Scale Loop Test for sulfate Scale Without Scale Inhibitor



Results of Dynamic Scale Loop Test for sulfate Scale With 100 ppm NuFlo[®] SIC-30 Scale Inhibitor

Using standard NACE cationic and anionic brines specified for Carbonate and Sulfate Scale Inhibitor Testing, a Minimum Inhibitor Concentration (MIC) was established for the NuFlo[®] SIC-30. Tests were run on a 9-foot stainless steel dynamic scale loop with an inner diameter of 0.03 inches, at 4000 psi, 87.8 °C with a flow rate of 10 ml/min. The anionic/cationic brine combination was found to block the tube (exceeding a pressure differential of 1 psi) within 5 minutes when a control test was run without any inhibitor. The addition of NuFlo[®] SIC-30 at concentrations of 25 and 100 ppm when treating Carbonate brine and sulfate brine, respectively, were found to prevent blocking in excess of 30 minutes, indicating that the NuFlo[®] SIC-30 inhibitor passes the criteria for being a successful Carbonate and sulfate scale inhibitor.

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