

Flo-Vis Plus

Flo-Vis* Plus high yield, premium-grade, clarified xanthan gum is the primary viscosifier for FloPro* NT, and FloPro* SF reservoir drill-in fluid systems.

It produces elevated low-shear-rate viscosity (LSRV) and high, but fragile, gel strengths. These properties provide superior hole cleaning and suspension, improved hydraulics, reduced torque and drag, and assist in minimizing filtrate invasion. All contribute to improved drilling performance, reduced formation damage and lower overall well costs.

Typical Physical Properties

Physical appearance	free flowing, beige powder
Specific gravity	1.5
Solubility in water.....	100%

Applications

Flo-Vis Plus rheology modifier is the key component of the FloPro NT reservoir drill-in fluid system. This readily dispersible, premium grade clarified xanthan gum provides the unique rheology profile important to the performance of the FloPro NT and FloPro SF systems. Flo-Vis Plus viscosifier is specially selected for M-I SWACO based on proprietary specifications for increased viscosity at ultra-low shear rates. It yields higher low-shear-rate viscosity than other polymers.

Flo-Vis Plus additive is more thermally stable than other biopolymer viscosifiers; however, salt and/or thermal extenders can improve performance at temperatures above 250°F (121°C). With a thermal extender, Flo-Vis Plus viscosifier may be used effectively in wells with bottom-hole temperatures to slightly greater than 330°F (166°C).

Flo-Vis Plus viscosifier is used in FloPro NT and FloPro SF reservoir drill-in fluids at concentrations of 0.75 to 2.25 lb/bbl (2.14 to 6.42 kg/m³). The recommended levels for special applications such as pills and milling operations are 2.25 to 3.25 lb/bbl (6.42 to 9.27 kg/m³).

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Advantages

- Yields significantly higher LSRV than other polymers, providing superior cuttings transport and suspension
- Compatible with strong cationic hydration suppressants such as Kla-Gard* additive
- Provides superior viscosity in saltwater's, including KCl, field brines, seawater and workover/ completion fluids, as well as fresh water. Special mixing procedures also allow Flo-Vis Plus viscosifier to be used in CaCl₂ and formate salt systems.
- Provides lower high-shear-rate viscosity than other viscosifiers while lowering standpipe pressures and minimizes pressure loss, ECDs and surge/swab pressures
- Aids filtration control by slowing the rate of filtration invasion into the formation
- Minimizes formation damage in the production zone by leaving virtually no residue after treatment with an appropriate breaker since the polymer is clarified
- Environmentally acceptable product with lower toxicity at the recommended concentration

Limitations

- Although Flo-Vis Plus viscosifier is more resistant to bacterial degradation than other biopolymer viscosifiers, a biocide is recommended to prevent fermentation in fluids that are not saturated with salt.
- Drill solids contamination interferes with the unique rheology obtained with Flo-Vis Plus agent and diminishes its non-damaging characteristics. Low-gravity solids and MBT values should be monitored and maintained at the lowest possible level. High-capacity shale shakers capable of processing the fluid through 150 – 250 mesh screens are beneficial to the economic usage of the FloPro NT and FloPro SF systems.
- Because of its slightly anionic character, caution should be used when combining Flo-Vis Plus viscosifier with cationic additives such as corrosion and scale inhibitors.
- Soluble iron can crosslink Flo-Vis Plus viscosifier, creating a viscous gel. Soluble iron should be chelated with citric acid or precipitated with MgO.
- High pH and high soluble calcium hydrolyze and precipitate Flo-Vis Plus additive. Calcium-base systems should use MgO for alkalinity. Cement should be aggressively pre-treated with citric acid and sodium bicarbonate, or drilled with another system

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Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions as described in the Material Safety Data Sheet (MSDS).

Packaging and Storage

Flo-Vis Plus viscosifier is packaged in 25-lb (11.3-kg), 25 kg, multi-wall, paper sacks.

Store in a dry location away from sources of heat or ignition and minimize dust.

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