TECHNICAL SHEET

PERFORMANCE SP: Inhibitive Water-based Polymer Fluid

KEY BENEFITS

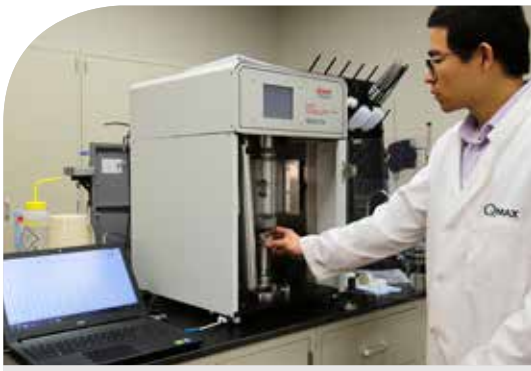
- Greatly enhances HT resistance
- A non-corrosive brine
- Higher ROP compared to a polymer mud
- Minimal formation damage
- Easy to prepare and maintain
- Low rheologies give turbulent flow
- Exceptional for horizontal drilling
- Lower pump rates due to low rheology

HPHT Drill-in and Completion Fluid

QMax's PERFORMANCE SP drill-in and completion fluid is an inhibitive sodium and potassium formate-based fluid, created in response to the industry need for an HPHT drill-in and completion fluid which was free from barite, oil, and halides. PEFORMANCE SP is an effective replacement for other inhibitive WBM, such as silicates or amine salts-based inhibitive systems.

PERFORMANCE SP is a high-density, solids-free, drilling fluid able to achieve densities up to 13.1 ppg (1570 kg/m3) without any weighted solids. This results in lower ECDs and surge/swab pressures, improved hole cleaning, faster ROP (up to 2x in comparison to conventional invert), as well as 3 to 4x superior bit performance and remarkably prolonged bit life. If higher densities are required, calcium carbonate, MICROMAX™, or MICRODENSE can be added to the system to increase mud weight.

Significantly less corrosive than halide brine systems, PERFORMANCE SP has a naturally alkaline pH which can be buffered with carbonate/bicarbonate ions to handle large influxes of acid gas (CO2, H2S). Additionally, as a halide-free fluid, it evades corrosion problems such as pitting and stress cracking. The fluid is rich in anti-oxidant anions, minimizing the occurrence of oxidation and the need for the addition of oxygen scavengers.



Compatible with common polymers, the system is effectively used to increase viscosity and control fluid loss.

PERFORMANCE SP contains the monovalent K+ cation, providing shale inhibition. Unlike divalent ions, such as Ca++, K+ will not react with reservoir fluids and produce insoluble precipitates and scale deposits.

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PERFORMANCE SP is recyclable and can be reused from well-to-well with minor reconditioning. The non-corrosive nature of the fluid guarantees easy storage between uses. When diluted in the 10.4 – 11.7 ppg (1250-1400 kg/m3) range, the fluid is temperature stable to -30°C and will not crystalize.

PERFORMANCE SP		
Property	**Range**	**Min / Max recommended**
Mud Weight, ppg (kg/m³)	8.5 - 19 (1020 - 2280)	19 (2280) Max.
PV, YP, Gels	ALAP	ALAP
pH	9.0 - 9.5	10.0 Max.
K+ ion content, mg/l	5,000 - 547,223	As required
MBT, ppb-eq (kg/m³)	0 - 10.2 (0 - 28)	10 Max. (28)

The rheology of the brine offers the ability to maintain turbulent flow for effective horizontal hole cleaning at lower pump rates. Turbulent flow in the horizontal prevents formation of cuttings beds due to the lack of dead spots in the flow profile. High rotary speeds during cleanup cycles are not needed as solids beds will not form and would be ineffective due to the absence of viscous coupling with this fluid.

Field applications of potassium formate have resulted in improved ROP, better bit performance, longer bit life, and lower pump pressures.

We Deliver, No Excuses