

PERFORMAX

The perfect balance of high-performance drilling and environmental compliance

Applications

- Water-based drilling fluids
 - Fresh water to saturated monovalent brines

Features and benefits

- Increased drilling efficiency through:
 - Improved wellbore stability
 - Increased rates of penetration (ROP)
 - Reduced bit balling and accretion
 - Minimized differential sticking
 - Reduced torque & drag
- Reduce environmental impact with:
 - Greater compliance with worldwide standards
 - Higher solids removal efficiency
 - Lower dilution rates

The Baker Hughes **PERFORMAX™ high-performance water-based drilling fluid system** is designed to close the significant drilling performance gap between conventional water-based and emulsion-based drilling fluids without sacrificing environmental compliance.

The PERFORMAX system is designed for use with water salinities ranging from freshwater to saturated monovalent brine. Sodium chloride (NaCl) is typically used to create an osmotic driving force that reduces the water content of shale. The system is also compatible with monovalent salts such as potassium chloride (KCl) and formate brines.

The PERFORMAX system achieves shale stability through the combination of **MAX-SHIELD™ wellbore sealing polymer** and **MAX-PLEX™ shale control and wellbore stability additive**, both of which increase the membrane efficiency of shales in a manner similar to emulsion-based fluids.

Clay inhibition is achieved through the use of the **MAX-GUARD™ shale control additive**, a water-soluble clay hydration suppressant. MAX-GUARD additive prevents clay hydration by limiting the clay's uptake of water and electrostatically binding the clay mineral lattice. By suppressing clay

hydration, the additive also reduces clay plasticity to lower the tendency towards bit balling.

The **PENETREX™ rate-of-penetration (ROP) enhancer** is a proprietary blend of environmentally compliant base fluids and surfactants that preferentially wets the surfaces of metals, drilled cuttings and formations. This effectively provides a hydrophobic boundary, preventing cuttings and formation materials from adhering to metal surfaces, reducing accretion and torque and drag and increasing rates of penetration (ROP).

The **NEW-DRILL™ shale control additive** encapsulates drilled cuttings and facilitates their removal by the rig's solids control equipment. This additive works in combination with the MAX-GUARD component to maintain cuttings integrity and reduce dispersion, decrease dilution rates and lower mud maintenance costs.

Superior environmental performance

PERFORMAX system fully satisfies global environmental requirements and, in conjunction with satisfying regulatory and well-specific criteria, is permitted for discharge of both whole drilling fluid and drilled cuttings.

PERFORMAX high-performance water-based fluid system components

Product Name	Description
MAX-SHIELD™	Deformable sealing polymer
MAX-PLEX™	Shale control and wellbore stability additive
MAX-GUARD™	Shale control additive
NEW-DRILL™	Partially hydrolyzed polyacrylamide (PHPA) for shale inhibition
PENETREX™	Rate-of-penetration (ROP) enhancer/anti-bit balling and accretion

Additional information describing recommended treatment, environmental information, safe handling recommendations, packaging description, and typical physical properties is available for each product.