

PERFLEX

The perfect balance of high-performance drilling and environmental compliance

Applications

- Water-based drilling fluids
 - Fresh to saturated monovalent brines
- Environmentally sensitive areas
- Reactive shales

Features and benefits

- Total inhibition
 - Stable wellbores
 - Low dilution rates
 - Stable fluid properties
- Environmental compliance
 - Reduced environmental risks
 - Elimination of waste management costs
- Easy to build and maintain
- Minimized bit balling and accretion
 - Increased ROP
 - Reduced ECD and fluid losses
 - Reduced drag on trips

The oil and gas industry is drilling more difficult wells – in deep shelf, extended reach, horizontal and deepwater applications – that are expensive, technically challenging, and inherently risky. To reduce the potential for failure, operators often select conventional invert emulsion drilling fluids, despite their high cost and strict environmental constraints.

Environmental legislation is increasingly restricting the discharge of cuttings drilled with invert emulsion drilling fluid systems. Operators are challenged with accomplishing a balance between achieving drilling objectives and minimizing the potential environmental impact of the drilling fluid. The performance advantages of Invert emulsion drilling fluids are progressively being offset by environmental compliance restrictions. The Baker Hughes **PERFLEX™ high-performance, water-based drilling fluid system** provides the perfect balance of high-performance drilling and environmental compliance.

Competitive systems have focused on either reducing pore pressure transmission or minimizing swelling pressure in shale. However, these mechanisms of shale stability cannot be treated in isolation from one another. To achieve total inhibition,

both problems must be controlled simultaneously.

The PERFLEX drilling fluid system takes the total inhibition approach to control problem clays and shales using components that deliver drilling performance similar to invert emulsion drilling fluid systems.

The PERFLEX drilling fluid system combines membrane-forming agents, hydration suppressants, and a polymeric encapsulator to achieve inhibition of shales, clays, and cuttings in a manner similar to invert emulsion drilling fluids.

The PERFLEX drilling fluid 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 the shale. PERFLEX drilling fluid system is also compatible with monovalent salts such as potassium chloride (KCl) and Formate brines.

The PERFLEX system was designed to be the most technically advanced and environmentally acceptable water-based fluid system for drilling the industry's most challenging wells. The PERFLEX drilling fluid system has been successfully applied in onshore, shelf, and deepwater wells with growing use in both the US and internationally.

Typical components of PERFLEX drilling fluid system

Product Name	Description
MAX-SHIELD™	Reduces pore pressure transmission by sealing pore throats and microfractures
MAX-GUARD™	Suppresses clay hydration and swelling
PENETREX™	Coats tubulars, bit, and formation to reduce torque and drag and minimize bit balling and accretion