

PRODUCTION ENHANCEMENT SOLUTIONS



PRODUCTION ENHANCEMENT



CONFORMANCE IMPROVEMENT



INDEPTH CONFORMANCE IMPROVEMENT



WATER SHUTOFF



MOBILITY AND SWEEP IMPROVEMENT



RESIDUAL OIL RECOVERY



REFRAC DIVERSION

APPLICATION

Unconventional reservoirs are known for low recovery factors and sharp decline curves. Nalco Champion's production enhancement (PE) technology is designed to increase oil rate and improve recovery in unconventional, tight, mixed wet to oil-wet reservoirs. This patent pending technology works by altering rock wettability to a more water-wet state which has been shown to economically boost oil production rates and increase reserves. The PE technology can be applied at any point in the well lifecycle and it has been shown to increase oil rate in huff-and-puff applications. Injection as part of the completions package would maximize reservoir contact. In reservoirs under secondary recovery, the PE technology can be added to the current water injection as an enhanced oil recovery method. The PE technology is highly customizable and is formulated to be compatible with your oil, water, and reservoir rock. Nalco Champion and third party testing has shown that some injection or completion additives hinder oil recovery, reinforcing the importance of our approach of compatibility testing with your fluids and rock.

PRODUCT DESCRIPTION

PE products are constituted of nanostructured fluids designed to enter low permeability shale formations. The PE technology is added directly to the injection or completion fluids and has been shown to be effective at very low concentrations, significantly improving project economics. PE products can be injected utilizing fresh or produced water and have been shown to improve oil recovery in a wide range of reservoir salinities. Nalco Champion offers a full service model including laboratory / engineering design, onsite QA/QC, monitoring and pumping services for this patent pending technology. Depending on the application, other oil-field chemicals such as clay stabilizers, biocides, or scale inhibitors may be included in the formulation.

VALUE

- Incremental estimated ultimate recovery of up to 25%
- Designed for payback in 6-12 months
- Rapidly alter rock wettability from oil- to water-wet conditions
- Widely applicable: designed to enter permeability of 1 nano-Darcy and higher
- Robust formulations stable in water salinities up to 30 wt% and good tolerance to high hardness levels
- Stable under reservoir temperatures up to 300°F
- Designed to prevent emulsion issues during flowback
- Compatible with completions fluids

CRITICAL DESIGN FACTORS

- Utilize reservoir fluids and core to optimize PE formulation and dose rate to maximize return and minimize risk
- Huff-n-puff treatment volume is based off the estimated frac volume to ensure proper matrix contact. Treatment is placed below the fracturing gradient
- Onshore and offshore applications

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GOALZERO

SAFETY MATTERS

The safety of our associates, customers and communities is vitally important. From the way we operate, to the products we develop, to how we partner with customers, our goal is zero: zero accidents, zero incidents and zero environmental releases.

At Nalco Champion, safety is more than a metric, it's a mindset. It's how we conduct ourselves, every day, everywhere it matters.

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