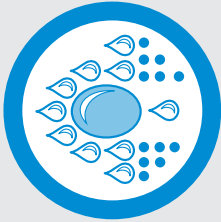


# INDEPTH CONFORMANCE IMPROVEMENT SOLUTIONS



## INDEPTH CONFORMANCE IMPROVEMENT



CONFORMANCE IMPROVEMENT



WATER SHUTOFF



MOBILITY AND SWEEP IMPROVEMENT



RESIDUAL OIL RECOVERY



PRODUCTION ENHANCEMENT



REFRAC DIVERSION

### APPLICATION

Waterflooding in heterogeneous reservoirs inevitably results in bypassed oil. Typically, a dominant high permeability thief zone channels the majority of injected water, severely limiting sweep efficiency. In these situations, it is desirable to place a viscous solution deep in the reservoir to improve the sweep and reduce injectivity loss. TIORCO has developed the BrightWater® nano-technology, which injects with a viscosity close to water and then with time and temperature expands deep in the reservoir resulting in reduced permeability in the thief zone and improved sweep efficiency.

### PRODUCT DESCRIPTION

BrightWater is a thermally activated chemistry allowing for targeted reduction of permeability and mobility in the reservoir. Designed to address conformance issues in non-fractured sandstones, this environmentally benign product provides a low risk option to address conformance, particularly in offshore environments. TIORCO has designed multiple grades of BrightWater which activate differently as a function of time and temperature, giving our engineers flexibility when designing a specific solution for your reservoir.

### VALUE

- Incremental and accelerated recovery of 0.5 to 1% OOIP at a cost of \$5-7 per incremental barrel of oil
- Easy Application: applied directly in the water injection line without the requirement for well intervention or shut-in of injector
- Limited injectivity loss due to the in-depth placement of BrightWater and injected viscosity close to water
- Wide Applicability: effective in waters with a TDS up to 150,000 ppm and a reservoir temperature up to 268°F (120°C)
- Reduced water treatment costs
- Small footprint batch application
- No negative effect on production facilities, water or oil quality

### CRITICAL DESIGN FACTORS

- Identifiable thief zone with known injector to producer transit time
- Non-continuously fractured sandstone reservoir
- Recoverable bypassed oil
- 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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