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OILFIELD SERVICES
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AquaBourne™ Water-Based Friction Reducer

The Industry's first suite of water-based high efficiency friction reducers

Slick-water fracturing is a proven, viable completion process in unconventional reservoirs. The trend is now to build-in more efficiency and reduce recovery costs based on improving completion designs, using inferior proppants and water quality compensated by the frac chemicals. One component of the frac under tremendous scrutiny is the friction reducer, requiring better performance at lower costs. The standard for better performance varies depending on the operator, meaning the product should reduce treating pressure, enable higher treating rates, or carry more proppant. Consequently, the number of different friction reducers has grown exponentially over the last few years to include invert emulsions, suspensions, dry FR powders, and our patented powder-emulsion suspensions, all to improve efficiency and reduce the cost per barrel of treated fluid.

At our core, we are an applications-oriented chemical company primed to bring new innovations to the market. Although we don't make friction reducers, as leaders in surfactant and polymer chemistries, we make them better, by matching customer completion challenges, regardless of difficulty or complexity, with affordable, "fit-for-purpose", viable solutions.

As a result, Innospec Oilfield Services focuses on the relationships between polymer chemistry, impact of ionic strength, hydration volume, viscosity, and fluid elasticity to release the newest its innovation to hydraulic fracturing.

Introducing the industry's first water-based friction reducer for freshwater and moderate to high TDS brines, AquaBourne™.

Typical Properties	
Appearance	Liquid, Off white Suspension
Density	10.6 lbs / gal
pH	6.6 to 8.6
Flash Point	Closed cup. N/A
Solubility	Soluble in cold or hot water

Handling and Storage

Store in a dry, cool, and well-ventilated area, away from incompatible materials. Keep bulk packaging hatches closed to prevent rainwater contamination.

Be sure to review the product SDS and always wear appropriate protective equipment. Do not get in eyes or on skin or clothing.

Product Description

AquaBourne is a new High Efficiency Friction Reducer (HEFR) designed with enhanced application robustness to meet the operator's many objectives. The new water-based slurry is composed of an anionic polyacrylamide and it provides excellent dispersion when added to frac water, providing rapid hydration in fresh as well as moderate to high TDS brine waters. The fast activation in the treating fluid is attributed to the product's aqueous carrier fluid. So, unlike oil-laden emulsions and suspensions, **AquaBourne** does not require the shedding of an oil layer prior to hydration. Consequently, the performance reviles the dry FR performance without need of any special handling equipment or personnel on location that can cause loss-time events.

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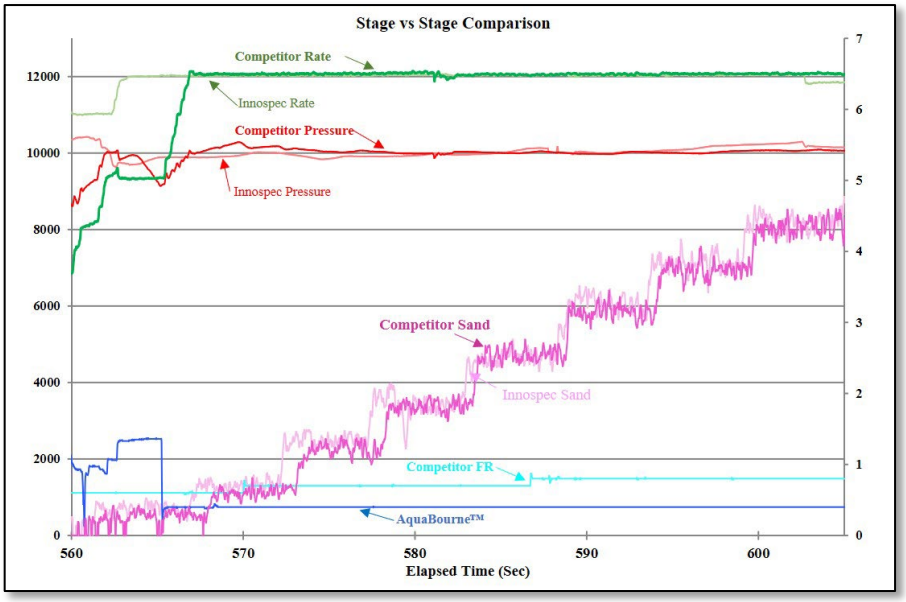
Product Features

In addition to fast activation, **AquaBourne™** is also designed to allow ***all*** the polyacrylamide to hydrate which maximizes performance prior to reaching the well-head. In contrast, oil-laden products are slower and less likely to fully activate, appearing to under-perform in side-by-side comparisons on location. Typical loadings of the product can range between 0.25 to 2.0 gpt (0.25 – 2.0 L/m^3), depending on operator objectives.



In a recent frac, the client was able to use 16% less polymer and replace 110 gals of oil per stage with the product's aqueous carrier fluid while holding the same pressure and rate as the oil-laden friction reducer.

About Innospec Oilfield Services (OFS)

An integral part of Innospec (NASDAQ: IOSP), Innospec Oilfield Services (OFS) is headquartered in The Woodlands, TX. The company's presence in North America is a highly focused one: Delivering the best possible chemical technologies and superior efficiencies along with the superior level of service vital to support drilling, completions, and production projects in all major U.S. oil and gas basins.

Founded in 1938, Innospec Inc. has evolved into a leading international specialty chemicals company with approximately 1,900 employees operating in 24 countries. Innospec has major regional centers in the U.S., UK and Singapore, with production plants located in countries including the U.S., UK, France, Germany, Italy, Spain, and the Philippines.

Innospec manufactures and supplies a wide range of specialty chemicals to markets in the Americas, Europe, the Middle East, Africa, and Asia-Pacific. In addition to designing, formulating, and producing oilfield chemicals for drilling, completions, and production applications, the company's other business segments are Fuel Specialties and Performance Chemicals.

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