

CLAIM 3 SUPPORT
SELECT CHEMISTRY LLC
PFR-465

Disclosure of the information is likely to cause harm to the competitive position of the entity holding the trade secret information.

Select Chemistry LLC is able to maintain its position and share of the market via the unique specialized products and services not offered by competitors.

Select Chemistry LLC has invested years of research and development into the selection of raw materials, specific blend ratios, subsequent lab and field testing prior to commercialization. These efforts have allowed Select Chemistry to generate proprietary chemistries that provide superior, cost-effective results for our clients. These novel chemistries provide a competitive edge for our group and helps to support further development to meet client and regulatory requirements.

The proper preparation of an oil and water emulsion like PFR-465 is advantageous to oil and gas well fracture operations as it allows a large amount of high molecular weight polymer chemical to be applied to high water flow rates. The manufacturing process and chemical formula of an oil and water emulsion require significant expertise and knowledge to create a stable mixture of immiscible oil and water phases which on their own and without the proper surfactant/surfactants and inversion package would separate into the constituent oil and water phases and be useless as a friction reduction additive.

In addition to the requirement of being a stable oil and water emulsion, chemistries like PFR-465 must also be able to exhibit the required characteristics of specific viscoelasticity and sand carrying capability under a wide range of shear stresses when inverted. The required viscoelasticity properties include the ability to be effective as a friction reducer by being able to elongate or contract (like a spring), depending on the shear stress experienced over a range of water flow rates and not degrade over time due to the experienced stress.

The determination of the component concentrations in the final blend requires a considerable time investment via the preparation of laboratory samples before moving on to trial batches of product, to review the following aspects of the final product:

- Product performance: The combination of emulsion and inversions surfactants in PFR-465 are chosen to provide a specific hydrophilic-lipophilic balance (HLB) value and solubility characteristics in waters that help our product invert in water very efficiently.
- Product Stability: the specific phenolic resin was chosen as it is stable over a wide range of temperatures. This reduces the likelihood of emulsion separation over time as well as limiting the formation of solids or gelling of the product.

Disclosure of the trade secret components of Product PFR-465 would negatively impact Select Chemistry's competitive advantage in the marketplace and would allow competitors to unfairly benefit from the substantial investment of money, corporate resources, ingenuity, and product development.