

# CompleteControl 100

## Complete control of clay swelling and fine generation

A new functionalized biopolymer that prevents clay swelling without fines generation

CompleteControl 100 is a functionalized biopolymer designed for complete clay control that works to prevent the hydration of reactive clays (swelling) without the generation of fines. CompleteControl 100 is a dual functional biopolymer that both encapsulates and electronically interacts with reservoir colloids.

The use of choline chloride, inorganic salts and quaternary ammonium salts are typically used as a temporary clay stabilizer. They work through the mechanism of cation exchange, where the hydrating cations (Na<sup>+</sup>, Ca<sup>2+</sup> or Mg<sup>2+</sup>) are replaced with K<sup>+</sup> or NH<sub>4</sub><sup>+</sup>. Although, swelling clays are dehydrated, this process lessens the integrity of the clay chemical structure and there is potential for fines generation. Furthermore, choline chloride in the presence of oxidizer breakers result in more fines generation, as oxidizers in the presence of choline chloride partially oxidize petroleum hydrocarbons re-exposing mineral faces.

CompleteControl 100 contains electronically optimized substituents engineered on the biopolymer backbone that are charged to locate and interact with the hydrating cations on the clays. The polymeric structure then anchors on the molecule and encapsulates the hydrating cation. As a result, the integrity of the clay lattice is preserved, minimizing the risk of fines generation. The polymeric structure does not occupy the pore throat volume like other permanent clay stabilizers. Furthermore, CompleteControl 100 is proven to be effective at low treatment concentrations.

### Features

- Incorporates polymeric structure that is charged to preferentially locate the hydrating cations in clays
- Polymeric structure encapsulates the hydrating cations
- Does not alter the clay lattice dimensions minimizing the risk of fines generation
- Does not occupy pore volume like other permanent clay stabilizers

### Benefits

- High regain conductivity performance
- High CST and turbidity performance
- Prevents the generation of fines
- Increase in production

### Technical Specification\*

Appearance	Light yellow to tan
pH	5.0 – 7.0
Specific gravity	1.108 ± 0.03
Density	9.230 (lbs/gal) ± 0.25
Freezing point	-13.3°C
Pour point range	-13 to -10°C
Flash point	> 94°C
Hazardous	Non-hazardous

\*all properties tested at 25°C ± 1°C





	CC 100	CC 100 + breaker	70% Choline Chloride	70% Choline Chloride + breaker	2% KCl	2% KCl + breaker
Dry gas (CST)	High improve	High improve	Moderate improve	Moderate improve	Moderate improve	Moderate improve
Dry gas (turbidity)	High improve	High improve	Moderate improve	Moderate damage	Moderate improve	Low improve
Condensate (CST)	Moderate improve	Low improve	Low improve	High damage	Moderate improve	No improve
Condensate (turbidity)	High improve	High improve	High damage	High damage	No improve	Low improve
Oil (CST)	High improve	High improve	Low damage	Low improve	Low improve	Moderate improve
Oil (turbidity)	Moderate improve	High improve	High damage	High damage	Low damage	Moderate improve

*Comparison of different Clay Stabilizers in the presence of different types of hydrocarbons*