

ULTRACAP PLUS

ULTRACAP[®] PLUS encapsulator is a low-molecular-weight, dry acrylic acid copolymer designed to provide cuttings encapsulation and clay dispersion inhibition.

It is designed for use in the M-I SWACO high-performance water-base ULTRADRIL[®] drilling fluid system. The ULTRACAP PLUS encapsulator provides minimal viscosity contribution and can enhance filtration properties. It is designed to be used in ULTRADRIL systems based on fresh- and saline-water environments.

Typical Physical Properties

Physical appearance	White powder
Specific gravity	0.8
pH (1% solution)	~6.0
Solubility in water	Soluble

Applications

The ULTRACAP PLUS additive provides excellent cuttings encapsulation by adsorbing onto the clay surfaces and forming a protective film that prevents cuttings from sticking to each other or to the shaker screens. The ULTRACAP PLUS encapsulator limits dilution rates and low-gravity solids loading by preventing clay solids from dispersing into the mud system. The product is effective in a wide range of base brines, including seawater, saturated NaCl and KCl. Typical concentrations of the ULTRACAP PLUS additive range between 2 to 4 lb/bbl (5.71 to 11.41 kg/m³).

Due to the low molecular weight of this polymer, the mixing process requires less shear than polymers with higher molecular weights. The resulting fluid will pass through fine shaker screens without blinding. The ULTRACAP PLUS agent should be added to the mud system via premix to ensure proper hydration and shearing, but can be mixed directly to the active system if needed. Best results are obtained when mixing the polymer through a powerful hopper and then passing once through a shear unit.

The ULTRACAP PLUS additive concentration can be monitored using a "light absorption" method. It is important to use a calibration curve for the ULTRACAP PLUS additive to determine the amount of total encapsulating polymer. Detailed instructions regarding the ULTRACAP PLUS testing procedure can be obtained by contacting the Houston Technical Services Department.

Dilution rates with premix should be based on the depletion rate of the ULTRACAP PLUS encapsulator. ULTRACAP PLUS premix concentrations can range as high as 4 to 5 lb/bbl (11.4 to 14.3 kg/m³), depending on the depletion rates.

The ULTRACAP PLUS additive will not undergo chemical hydrolysis in the presence of high pH but for optimum performance maintain the pH at less than 10.

Advantages

- Provides excellent cuttings encapsulation and limits cuttings dispersion
- Enhances removal of drill solids by reducing dispersion tendencies
- Makes very limited or no contribution to system viscosity
- Is easily added to the active system through a premix
- Can be used in KCl, NaCl or freshwater systems
- Is acrylamide free, resulting in no release of ammonia vapors at high pH
- Provides improved shale stabilization
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- Significantly lowers screen blinding potential, as compared to higher molecular weight encapsulators

Limitations

- Fluid systems containing the ULTRACAP PLUS encapsulator should be pretreated with citric acid before drilling cement to avoid chemical precipitation
- Calcium levels should be less than 500 mg/L

Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions as described in the Material Safety Data Sheet (MSDS).

Packaging and Storage

The ULTRACAP PLUS additive is packaged in 25-lb (11.34-kg), multi-wall, paper sacks.

Store in a dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.



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