**Poly-Plus Dry**

Poly-Plus Dry polymer is designed to provide cuttings encapsulation and shale stabilization.

Poly-Plus Dry polymer also performs as a viscosifier, friction reducer, flocculant, and provides some fluid-loss control. Poly-Plus Dry encapsulator is a high-molecular-weight PHPA copolymer. It can be used in mud systems ranging from low-solids to weighted muds, utilizing makeup waters from fresh to saltwater.

**Typical Physical Properties**

- Physical appearance: White, granular powder
- Specific gravity: 1.25 to 1.40
- Bulk density: 40 to 46 lb/ft³ (641 to 737 kg/m³)
- Nature of charge: Anionic

**Applications**

Poly-Plus Dry polymer provides cuttings encapsulation and improved wellbore stability. Typical concentrations are 0.25 to 2 lb/bbl (0.71 to 5.9 kg/m³). It is effective in salt muds such as KCl- or NaCl-enhanced fluids, although slightly higher concentrations of Poly-Plus Dry polymer may be required.

Poly-Plus Dry additive can be used in clear-water, solids-free drilling fluids. Poly-Plus Dry polymer enhances solids removal by flocculating the undesired solids.

Poly-Plus Dry agent is well suited to LSND-type muds. In reduced-bentonite muds, it extends bentonite to increase viscosity, flocculates the drill solids for more efficient removal, encapsulates cuttings and improves wellbore stability.

The effectiveness of the polymer is reduced as the concentration of dispersants/deflocculants is increased.

Viscous Poly-Plus Dry additive sweeps are effective for periodic hole cleaning. Sweeps may be prepared by mixing Poly-Plus Dry polymer directly in the active system at the suction pit or by premixing a high concentration in a separate pit and allowing the polymer to fully yield before being added to the active system.

When drilling top hole, a liquid solution of Poly-Plus Dry polymer may be poured into the drill pipe during connections to help hole cleaning and maintaining a clean stabilizer and bit, improving ROP.

**Advantages**

- Excellent cuttings encapsulator to suppress cuttings dispersion
- Provides improved shale stabilization
- Powdered material with significantly lower toxicity than invert-emulsion liquid PHPA polymers
- Improves the lubricity of most mud systems, particularly non-dispersed muds
- Aids in preventing balling on the bit, stabilizers and Bottom-Hole Assembly (BHA) by coating and lubricating solids
- Can be used to viscosify clear water and low-solids drilling fluids
- Compatible with other polymers, such as Polypac*, Tackle*, SP-101*, CMC, starch and Duo-Vis*
Limitations

- During the initial treatment of Poly-Plus Dry additive in a non-dispersed mud system, severe flocculation may occur causing high viscosity until all of the solids are coated.
- Subject to shear degradation of viscosity and may eventually lose its ability to viscosify, but cuttings encapsulation and shale stabilization are not affected.
- pH-sensitive with an optimum pH range of 8.5 to 10.5. At pH levels above this range, hydrolysis may convert.
- Acrylamide into acrylate and release ammonia (NH3).
- Temperature-stable to approximately 350°F (177°C) although the copolymer may begin to hydrolyze into polyacrylate when exposed to prolonged temperatures above 275°F (135°C) and release ammonia (NH3).
- Calcium-sensitive and begins to precipitate when the calcium concentration exceeds 300 mg/L.
- Treat cement contamination to keep the calcium and pH as low as possible. Use sodium bicarbonate along with a pH reducing product, such as lignite or citric acid to treat cement contamination before additions of Poly-Plus Dry product are made.

Toxicity and Handling

Bioassay information is available upon request.

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

Packaging and Storage

Poly-Plus Dry polymer is packaged in 50-lb (22.7-kg) multi-wall, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust.