

POLY-PLUS RD

Readily dispersible liquid clay inhibitor

APPLICATIONS

- Cuttings encapsulation
- Shale stabilization

ADVANTAGES

- Disperses readily and does not form “fish eyes”
- Limits cuttings dispersion with excellent cuttings encapsulation
- Improves shale stabilization
- Reduces toxicity compared with invert-emulsion, liquid polymers
- Reduces transportation costs and storage space requirements because of high concentration (>90% activity)
- Coats and lubricates solids to prevent balling
- Enhances removal of drill solids
- Can be used to viscosify clear-water and low-solids drilling fluids

POLY-PLUS RD* readily dispersible liquid clay inhibitor is formulated for easy mixing with improved dispersion to eliminate the formation of fish eyes. This is beneficial when rapidly mixing either large quantities or high concentrations of polymer where good mixing equipment is unavailable. The inhibitor acts as a viscosifier, friction reducer, and flocculant. It also provides some fluid-loss control.



The inhibitor is a specially treated, high-molecular-weight additive. It can be used in mud systems ranging from low-solids to weighted muds, using makeup waters from freshwater to saltwater.

POLY-PLUS RD inhibitor fluid systems: This inhibitor provides excellent cuttings encapsulation and improved wellbore stability. Typical concentrations of POLY-PLUS RD inhibitor are 0.25 to 1 lb/bbl [0.71 to 2.85 kg/m³]. It is also effective in salt muds, such as KCl- or NaCl-enhanced fluids, although slightly higher concentrations of the inhibitor may be required.

Clear-water fluids: The inhibitor can be used in clear-water, solids-free drilling fluids. This product enhances solids removal by flocculating the undesired solids and increasing viscosity. The polymer also provides cuttings encapsulation and improved wellbore stability. POLY-PLUS RD inhibitor is frequently used in slimhole, continuous-coring applications.

Low-solids, nondispersed (LSND) fluids: The inhibitor is well suited to LSND systems. In reduced-bentonite fluids, POLY-PLUS RD inhibitor extends bentonite to increase viscosity, flocculates drill solids for more efficient removal, encapsulates cuttings, and improves wellbore stability.

POLY-PLUS RD inhibitor sweeps: Viscous inhibitor sweeps are effective for periodic hole cleaning. Circulating a POLY-PLUS RD inhibitor sweep through the well helps clear accumulated cuttings and maintain a clean hole.

Typical Properties in Freshwater

| Concentration, lb/bbl [kg/m ³] | Plastic Viscosity, [cP] | Yield Point, lb/100 ft ² | Marsh Funnel, s/qt |
|--|-------------------------|-------------------------------------|--------------------|
| 0.125 [0.4] | 2 | 1 | 28 |
| 0.25 [0.7] | 3 | 2 | 31 |
| 0.50 [1.4] | 4 | 4 | 34 |
| 0.75 [2.1] | 6 | 8 | 46 |
| 1.00 [2.9] | 9 | 11 | 60 |
| 1.50 [4.3] | 15 | 17 | 110 |

POLY-PLUS RD

LIMITATIONS

- Severely flocculant during the initial treatment of inhibitor in a nondispersed fluid system. Flocculation causes high viscosity until all of the solids are coated. POLY-PLUS RD inhibitor uses low concentrations (<15 lb/bbl [$<43 \text{ kg/m}^3$]) of MAX GEL* viscosifier to reduce this interaction. Continued additions of inhibitor result in a stable system with the desired rheology.
- Calcium-sensitive and begins to precipitate when the calcium concentration exceeds 300 mg/L.
- The inhibitor is pH-sensitive with an optimum range of 8.5 to 10.5. At levels above this range, hydrolysis can convert acrylamide into acrylate and release ammonia.
- Temperature-stable to approximately 350 degF [177 degC], although the copolymer can begin to hydrolyze into polyacrylate when exposed to prolonged temperatures above 275 degF [135 degC] and release ammonia.
- Subject to shear degradation of its viscosity and can lose its ability to viscosify. Cuttings encapsulation and shale stabilization are not affected.

Addition method

POLY-PLUS RD inhibitor can be mixed directly into the active mud system. It can also be premixed at higher concentrations in a separate pit or chemical barrel and then blended into the active system. Sweeps can be prepared by mixing the inhibitor 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 pumped.

Contamination

This inhibitor reacts with multivalent cations, such as calcium. In concentrations greater than 300 mg/L, calcium causes the polymer to precipitate. Use soda ash to remove calcium concentrations above 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.

Toxicity and handling

Bioassay information available upon request. No special requirements are necessary for handling and storage. Avoid inhalation of dust. A dust respirator and goggles are recommended if mixing in an enclosed area.

Packaging and storage

POLY-PLUS RD inhibitor is packaged in 50-lb [22.7-kg], multiwall paper sacks or 5-galUS [18.9-L] buckets. Store in a dry location away from sources of heat or ignition, and minimize dust.

Typical Physical Properties

| | |
|---------------------|---|
| Physical appearance | White, granular powder |
| Odor | Slightly hydrocarbon |
| Specific gravity | 1.25–1.40 |
| pH (1% solution) | 7.7 |
| Bulk density | 40–46 lb/ft ³ [641–737 kg/m ³] |
| Nature of charge | Anionic |
| Activity | >90% |

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