



Drilling Fluids, Inc.

Viscosifier

HEC

Description

HEC is a nonionic, ultrahigh molecular weight hydroxyethyl cellulose designed specifically to viscosify water based fluids. HEC disperses in water and salt water to produce a polymer solution that is clear, viscous and essentially residue free.

Uses

HEC is a preferred rheology modifier for workover and completion fluids since it readily biodegrades in oil or gas producing formations and does not produce appreciable low shear viscosities. It is used primarily as an additive for brine fluid thickening and occasionally as a reducer of hydraulic friction for coil tubing applications.

Benefits

HEC is compatible with biocides, oxygen scavengers, fluid loss controllers and foam control agents. It helps provide clean, low-solid fluids that impart minimum formation damage. HEC Fluids do not possess gel strengths or any particular high low shear rate viscosity. HEC is the preferred viscosifier for controlled settling gravel packs. Fluids viscosified with HEC are easily broken with acid, enzymes (H-Break 100), or oxidizing agents (SDIC) to maximize the potential for hydrocarbon recovery.

Treatment

HEC is used at 0.5 to 2.0 ppb concentrations. Most commonly 1.0 ppb is used for hole opening and gravel packing. As a treatment for losses to the producing formation treatments as high as 3 ppb may be used to increase the viscosity to a point when the fluid no longer flows through the pores.

Function

HEC fluids exhibit shear-thinning behavior known as pseudoplasticity. Under high shear rates at the drill bit, the apparent viscosity thins, thereby increasing penetration rates, whereas in low-shear zones such as the annulus, viscosity is regained instantaneously, providing excellent cuttings carrying capacity for optimum hole cleaning.



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HEC (continued)

Typical Physical Properties

Physical Appearance.....Free Flowing, off-white powder
Specific Gravity.....0.4-0.6
pH in water.....6.0 to 7.0

Safe Handling Recommendation

Utilize normal precautions for employee protection when handling chemical products. Use of appropriate respirator, gloves, goggles, and apron is recommended for employee comfort and protection. See Material Safety Data Sheet (MSDS) for this product prior to use.

Packaging

HEC is packaged in 50 pound multi-wall plastic bags.