



Drilling Fluids, Inc.

**DESCRIPTION**

**USES**

**BENEFITS**

**TREATMENT**

**FUNCTION**

**TYPICAL PHYSICAL PROPERTIES**

**SAFE HANDLING RECOMMENDATIONS**

**PACKAGING**

**GEO Drilling Fluids, Inc.**

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# HEC

**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.

**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.

**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.

**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.

**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.

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

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.

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

