Greenbase™ HEC Polymer

Drilling Specialties' Greenbase™ HEC Polymer is a pure high-viscosity hydroxyethyl cellulosic polymer suspended in glycol ether. The HEC used in this product is carefully chosen to provide the highest solution viscosities possible with this type of polymer. This HEC suspension is uniquely stable, easily handled and useful in both oilfield and non-oilfield applications.

Greenbase™ HEC Polymer is 37% active will not experience the separation which is evident in other liquid products. It is not subject to settling or fluid separation under normal storage or transport conditions. Starting with an environmentally friendly fluid and utilizing our unique suspension technology, we eliminated settling of the pure HEC polymer solids while the product remains fully pourable. The long-term stability of the suspension provides for consistent, reliable product properties at your field locations any place in the world.

Product Stability

Drilling Specialties Greenbase™ HEC Polymer is made from the Drilling Specialties suspension Technology. This technology is well known for the quality and stability of suspension products it produces. By preventing polymer settling and fluid separation, the technology assures trouble-free storage, transport and mixing – all essential to cost-efficient and successful operations. This allows for efficient quick mixes and sweeps without the need for elaborate and expensive mixing equipment. Also, more accurate metering of active products results in improved fluid performance down hole.

Advantages

- Easy to handle and mixes well in low shear rate environments
- Works well at any salinity
- Increases carrying capacity of fluid
- May be poured down drill pipe
- No "fisheyes"
- Extremely stable suspension
- Highly effective viscosifier
- No preservative needed

Performance

Fann 35 viscosity data are shown in Tables 1 and 2 below for Liquid HEC polymer in Sea Water and in a saturated sodium chloride fluid.

In a typical field application Greenbase™ HEC Polymer is rapidly mixed through conventional rig mixing equipment. Complete hydration and viscosity development occur quickly and without the formation of fish eyes. In most cases, no shear mixing is needed to produce thorough dispersion and homogeneous mixtures – critical characteristics of both drilling and completion fluids exposed to the producing reservoir.

Cost

Greenbase™ HEC Polymer is an extremely efficient liquid suspension which eliminates loss of active polymer over shale shakers, thus reducing overall fluid costs. As a liquid suspension this polymer disperses in water and develops viscosity very quickly.

Mud Types

Most water-based formulations, drill-in, completion and workover fluids

Technical Information

Activity 37% by weight (3.2lb polymer/gal)
Flash Point 220°F(104°C)
Pour Point -35°F
Density 8.70 lb/gal
Color cream

Mixing Requirements

Low-shear mixing equipment is sufficient to provide thorough dispersion and homogeneous mixtures

Handling

For specific instruction on handling, refer to the MSDS

Packaging

The Greenbase™ HEC polymer is generally packaged in disposable pails, containing a net weight of 44 lb of product (16 lb of HEC) 32 pails per pallet. Other packaging options such as 275-gallon totes are available.

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Applications	Material Needed
To viscosify carrying fluid in gravel packing	0.50 to 1.00 gal/bbl
As a general viscosifier for workover and completion fluids	0.25 to 0.75 gal/bbl
For viscous hole sweeps in horizontal drilling	0.50 to 0.75 gal/bbl
Fluid-loss control	0.50 to 1.00 gal/bbl
Rheology control	0.50 to 1.00 gal/bbl
For carrying capacity in clean fracture fluids	0.50 to 1.00 gal/bbl

Table 1 Typical Rheologies

Greenbase™ HEC in Sea Water

	0.08	0.16	0.23	0.31	0.47	0.63	0.78	0.94	Gal/BBl
n'	0.7691	0.7604	0.6292	0.5565	0.4637	0.4171	0.3445	0.3118	
k'	0.0003	0.0008	0.0030	0.0080	0.0267	0.602	0.1421	0.2629	Dyne/cm^2
Viscosity	5	11	21	39	81	144	235	367	cP(170sec-1)
PV	2.5	4	7	10	16	26	29	35	cP
YP	1	4	7	14	29	50	85	137	Lb/100f^2

Table 2 Typical Rheologies

Greenbase™ HEC in Saturated NaCl

	0.08	0.16	0.23	0.31	0.47	0.63	0.78	0.94	Gal/BBl
n'	0.9972	0.7157	0.5826	0.5706	0.4266	0.3730	0.3190	0.2793	
k'	0.0001	0.0014	0.0054	0.0091	0.0418	0.0960	0.1973	0.3462	Dyne/cm^2
Viscosity	6	15	30	48	105	184	286	409	cP(170sec-1)
PV	4	8	11	13	20	29	35	41	cP
YP	2	3	8	17	36	63	100	144	Lb/100f^2

Special Uses

1. As a viscosifier in saturated NaCl, KCl and $CaCl_2$ brine to 250 °F
2. As a thickener for $CaBr_2$ to 150 °F
3. As a filtrate reducer and bore-hole stabilizer in saturated NaCl, KCl, and $CaCl_2$ brine to 300 °F