DUO-VIS

Xanthan gum is a dispersible, non-clarified, high-molecular-weight biopolymer used for increasing viscosity in water-base drilling fluid systems.

ADVANTAGES

- Highly effective viscosifier; with minimal treatments producing significant results
- Shear-thinning rheological profile for improved hydraulics
- Minimum frictional pressure losses for additional hydraulic horsepower at the bit and low, high shear-rate viscosity for maximum penetration rates
- Viscous laminar flow in the annulus for improved wellbore stability with maximum hole-cleaning and suspension capacity
- Mixes easily

Small quantities provide viscosity and weight material suspension for all water-base mud systems.

Duo-Vis biopolymer has the unique ability to produce a fluid that is highly shear-thinning and thixotropic.

APPLICATIONS

The primary function of Duo-Vis biopolymer is to increase viscosity for cuttings transport and suspension. It performs effectively in all water-base fluids, ranging from highly weighted to low-solids systems. This includes freshwater, seawater, salt and heavy-brine fluid systems.

Duo-Vis biopolymer delivers an optimized rheological profile with elevated low-shear-rate-viscosity and highly shear-thinning characteristics. These characteristics frequently result in fluids with inverted flow properties, i.e., the yield point being greater than the plastic viscosity. Shear-thinning fluids have low effective viscosities at the high shear rates encountered both inside the drillstring and at the bit. This low effective viscosity generates for minimal pressure losses and standpipe pressures, thus allowing optimized hydraulics and increased rates of penetration. Conversely, for the low shear rates experienced in the annulus, Duo-Vis biopolymer enables the fluid to have a high effective viscosity that adequately suspends cuttings and cleaning of the well.

Duo-Vis biopolymer should be added slowly through the hopper to prevent lumping and minimize waste. It should be added at the rate of approximately one 25 lb sack every seven minutes. The time required for the product to yield its ultimate viscosity depends on salinity, temperature and shear. The amount of Duo-Vis biopolymer required depends upon the desired viscosity. Normal concentrations range from 0.25 to 2 lb/bbl (0.71 to 5.7 kg/m^3) for most mud systems. Special fluids and difficult hole-cleaning conditions can require higher concentrations of, up to 4 lb/bbl (11.4 kg/m^3).

The addition of salt, an antioxidant and thermal stabilizers improve temperature stability in fluids from 250 to >280° F (121 to >138° C). Specially formulated systems have been used at temperatures of 400° F (204° C). Duo-Vis biopolymer is subject to bacterial degradation, and treatments with a biocide is recommended to prevent fermentation.

Erica Balderson
ebalderson@slb.com
877.762.2688

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LIMITATIONS

- Trivalent ions such as chromium and iron can cause biopolymer precipitation and loss of viscosity or crosslinkingReduces risk of
- Intolerant of high-pH or high-calcium-ion conditions
- DUO-VIS systems should be pretreated with either sodium bicarbonate or SAPP and citric acid prior to drilling cement
- Subject to bacterial degradation, a biocide should be used to prevent fermentation
- The slightly anionic nature of DUO-VIS biopolymer requires special mixing procedures when combined with cationic materials

TOXICITY AND HANDLING

Bioassay information is available upon request.

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

PACKAGING AND STORAGE

DUO-VIS biopolymer is packaged in 25 lb (11.3 kg) or 55.1 lb (25 kg), plastic-lined, multi-wall, paper sacks.

Store at room temperature in a dry, well-ventilated area. Keep in original container. Keep container closed. Store away from incompatibles.

TYPICAL PHYSICAL PROPERTIES

Physical appearance	Cream-to-tan powder
Specific gravity	1.5
Bulk density	50 lb/ft^3 (800 kg/m^3)

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