DUO-VIS/SUPER-VIS

DUO-VIS/SUPER-VIS* xanthan gum is a high-molecular-weight biopolymer used for increasing carrying capacity in water-base systems. DUO-VIS/SUPER-VIS biopolymer has the unique ability to produce a fluid that is highly shear-thinning and thixotropic.*

Typical Physical Properties

Physical appearance	Cream to tan powder
Specific gravity	1.5
Bulk density	50 lb/ft³ (800 kg/m³)

Applications

The primary function of DUO-VIS/SUPER-VIS biopolymer is to increase low shear viscosity for cuttings transport and suspension. This product performs effectively in all water-base fluids, from highly weighted to low-solids systems, including freshwater, seawater, salt and heavy-brine systems.

DUO-VIS/SUPER-VIS xanthan gum works to provide an optimized rheological profile with elevated low-shear-rate viscosity and highly shear-thinning characteristics with low "n" values. These characteristics frequently result in fluids with inverted flow properties (*i.e.*, the yield point is greater than the plastic viscosity). Shear-thinning fluids have low effective viscosities at the high shear rates encountered inside the drillstring and at the bit. This low effective viscosity for minimal pressure losses and standpipe pressures allows optimized hydraulics and maximized rates of penetration. Conversely, at the low shear rates experienced in the annulus, the DUO-VIS/SUPER-VIS product enables the drilling fluid to have a high effective viscosity for adequately cleaning the well and suspending cuttings.

DUO-VIS/SUPER-VIS biopolymer should be added slowly through the hopper to prevent lumping and minimize waste. It should be added at the rate of approximately 2 lb (0.91 kg) every 2 min. The time required for the product to yield its ultimate viscosity depends on salinity, temperature, and shear.

The amount of DUO-VIS/SUPER-VIS product required depends on the desired low-shear-rate viscosity. Normal concentrations range from 0.25 to 2 lb/bbl (0.71 to 5.7 kg/m³) for most mud systems. Special fluids and difficult hole-cleaning conditions can require higher concentrations up to 4 lb/bbl (11.4 kg/m³).

DUO-VIS/SUPER-VIS biopolymer is subject to bacterial degradation, and treatments with a biocide are recommended to prevent fermentation if used for prolonged periods.

Advantages

- Highly effective suspension enhancer; small treatments produce significant results
- Provides a 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
- Easy to mix

Limitations

- Trivalent ions such as chromium and iron can cause biopolymer precipitation and loss of viscosity or cross-linking
- DUO-VIS/SUPER-VIS systems should be pretreated with either sodium bicarbonate or SAPP, and possibly citric acid, prior to drilling cement
- Subject to bacterial degradation; a biocide should be used to prevent fermentation if used for prolonged periods
- Lightly anionic nature of DUO-VIS/SUPER-VIS biopolymer requires special mixing procedures when mixed 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 Sheets (MSDS).

Packaging and Storage

DUO-VIS product is packaged in 25-lb (11.3-kg) sacks.

SUPER-VIS product is packaged in 2-gal (7.6-L) buckets (12.5-lb [5.7-kg] per bucket). The product can also be packaged in 15- to 2l-lb (6.8 to 0.91 kg) baggies per 5-gal (18.9-L) bucket.

Store in a well-ventilated area away from sources of heat or ignition.

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