

DUO-TEC NS high-molecular-weight, nondispersible, clarified xanthan gum viscosifier

Provides low-shear-rate viscosity and weight-material suspension for all water-based mud systems

Applications

- Increases viscosity for cuttings transport and suspension
- Performs effectively in all water-based fluids, from highly weighted to low-solids systems, including freshwater, seawater, salt, and heavy-brine systems

Optimize rheological profile

DUO-TEC NS* high-molecular-weight, nondispersible, clarified xanthan gum viscosifier provides 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 enables optimized hydraulics and maximized ROP. Conversely, at the low shear rates experienced in the annulus, DUO-TEC NS viscosifier enables the fluid to have a high effective viscosity for adequately cleaning the well and suspending cuttings.

Apply slowly

Add DUO-TEC NS viscosifier slowly through the hopper to prevent lumping and minimize waste. It should be added at the rate of approximately one 25-lbm [11.3-kg] sack every 7 to 10 min. The time required for the product to yield its ultimate viscosity depends on salinity, temperature, and shear.

Concentration

The required amount of DUO-TEC NS viscosifier depends upon the desired viscosity. Special fluids and difficult hole-cleaning conditions can require higher concentrations.

The addition of thermal stabilizers and associated additives improves temperature stability in DUO-TEC NS viscosifier from 250 to 300 degF [121 to 149 degC]. DUO-TEC NS viscosifier is subject to bacterial degradation, and treatments with a biocide are recommended to prevent fermentation.

Advantages

- 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

Limitations

- Trivalent ions such as chromium and iron can cause biopolymer precipitation and loss of viscosity or crosslinking
- Not tolerant of high-pH or high-calcium-ion conditions
- DUO-TEC NS viscosifiers should be pretreated with either sodium bicarbonate or sodium acid pyrophosphate and possibly citric acid prior to drilling cement
- Subject to bacterial degradation; a biocide should be used to prevent fermentation
- Slightly anionic nature of DUO-TEC NS viscosifier 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 safety datasheet (SDS).

Packaging and Storage

DUO-TEC NS viscosifier is packaged in 25-lbm [11.3-kg] or 55.1-lbm [25-kg], plastic-lined, multiwall, paper sacks.

Store in a dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping, or stacking.

Typical Physical Properties

Physical appearance	Cream-to-tan powder
Specific gravity	1.4–1.6

All specifications are subject to change without notice.