

Duo-Vis NS

Duo-Vis NS additive provides viscosity, including LSRV, and weight-material suspension for all water-base mud systems. Duo-Vis NS additive 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/ft ³ (800 kg/m ³)

Applications

The primary function of Duo-Vis NS additive is to increase viscosity for cuttings transport and suspension. It will perform effectively in all water-base fluids, from highly weighted to low-solids systems. This includes fresh water, seawater, salt and heavy-brine systems.

Duo-Vis NS additive 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 being greater than the plastic viscosity. Shear-thinning fluids have low effective viscosities at the high shear rates encountered inside the drill string 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, Duo-Vis NS additive enables the fluid to have a high effective viscosity for adequately cleaning the well and suspending cuttings.

Duo-Vis NS additive 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 (11.3-kg) sack every 7 to 10 minutes. The time required for the product to yield its ultimate viscosity depends on salinity, temperature and shear.

The amount of Duo-Vis NS additive required will depend upon the desired viscosity. Normal concentrations range from 0.50 to 2.5 lb/bbl (1.43 to 7.1 kg/m³) for most mud systems. Special fluids and difficult hole-cleaning conditions may require higher concentrations – up to 4.0 lb/bbl (11.4 kg/m³).

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

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Advantages

- Highly effective viscosifier
- 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 max 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 may cause biopolymer precipitation and loss of viscosity or crosslinking
- Not tolerant of high-pH or high-calcium-ion conditions Duo-Vis NS systems should be pre-treated 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
- Slightly anionic nature of Duo-Vis NS additive 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 Sheet (MSDS).

Packaging and Storage

Duo-Vis NS additive is packaged in 25-lb (11.3-kg) or 25-kg (55.1-lb), plastic-lined, multi-wall, paper sacks.

Store in a dry location away from sources of heat or ignition, and minimize dust

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