

# BIODRILL TM100

## Environmentally friendly deflocculant for the oil & gas drilling industry

Borregaard's BioDrill TM100 is a potassium salt lignin-based product used as thinner and deflocculant for water-based drilling fluids. It is formulated with bentonite to reduce gel strength and help control rheology.

BioDrill TM100 is a potassium lignosulfonate which is preferentially used with KCl-polymer water-based drilling fluids. It is a negatively charged anionic lignosulfonate containing only potassium cations.

BioDrill TM100 reduces low shear rate viscosity, yield point and gel strength. It is an especially useful deflocculant in the case of drilling reactive clays where pre-hydrated bentonite is applied for viscosity modification and filtration control.

### RECOMMENDED USE:

- Thinner/deflocculant in the presence of bentonite clays for water-based drilling fluids.
- Recommended treatment: 2 - 10 lb/bbl (5.7 – 28.6 kg/m<sup>3</sup>)
- Temperature stable thinner useful to 120°C (250°F)

### FUNCTION WITH CONTAMINANTS:

Temperature stable and contaminant tolerant thinner/deflocculant for water-based drilling fluids.

- Calcium & magnesium tolerance: Can be used in lime, gypsum-based systems.
- Salt tolerance: Can be used in fresh water, brackish water, seawater.
- Chloride tolerant.

### EASE OF USE:

- Wide range of pH alkalinities. Caustic soda or potash addition not required.
- Solubilises readily in water.
- Does not have to be pre-solubilised in caustic.
- Does not require a biocide.

### SECONDARY FUNCTION:

- Promotes control of fluid loss up to 120°C (250°F)

**Example: Deflocculation and thermal stability evaluation in KCl drilling fluid**

A KCl drilling fluid was prepared using pre-hydrated bentonite treated with KCl to produce a drilling fluid with the following characteristics: 9.3 ppb; 14 ppb KCl; 27 ppb API bentonite. pH was adjusted to 10.5 and then hot-rolled for 24 hours at 160°C.

The rheology results demonstrate BioDrill TM100's ability to reduce apparent viscosity and yield point even after aging at 160°C.

	KCl Base Fluid	KCl Base Fluid w/ 3.5 ppb BioDrill TM100	KCl Base Fluid w/ 3.5 ppb BioDrill TM100 Hot-rolled 160°C for 24h
	Apparent viscosity, cP	28	13
Plastic viscosity, cP	5	5	6
Yield Point, lbs/100ft <sup>2</sup>	45	15	5
10" gel, lbs/100ft <sup>2</sup>	17	12	6
10' gel, lbs/100ft <sup>2</sup>	10	10	20

Table 1. BioDrill TM100 in KCl drilling fluid.