ELEMENTIS
A global specialty chemicals company

Enhanced Performance Through Applied Innovation

THIXATROL® DW 100

Biodegradable - yellow - polymeric high temperature / deep water flat rheology viscosifier for oil based drilling fluids

GENERAL INFORMATION

THIXATROL DW 100 is a unique proprietary organic polymer that has an OECD306 biodegradability of 43% and PARCOM classification of D. **THIXATROL DW 100** generates an efficient rheological profile in synthetic based invert emulsion drilling fluids while having a minimal viscosity increase when subjected to reduced temperatures. This highly desirable flat rheological property is stable through 350ºF and can be extended to applications beyond deep water drilling.

THIXATROL DW 100 has a greater impact on increasing LSRR as compared to HSRR. This low shear rate rheology enhancement decreases the ratio of PV:YP to maximize hole cleaning and ROPs

The combination of maintaining a consistent or flat rheological profile from 40ºF through 350ºF, coupled with being biodegradable and not toxic to marine life, allows for the global application of THIXATROL DW 100.

THIXATROL DW 100 exhibits an excellent balance of dispersibility for initial viscosity build, efficiency for cost effectiveness and tolerance to adverse conditions for reduced depletion rates. Control of ECD is significantly improved as compared to drilling fluids incorporating only conventional rheological additives.

CHEMICAL & PHYSICAL PROPERTIES

Composition	oil soluble polymer
Color	yellow to amber
Form	liquid
Specific gravity	0.96
Pour Point	0°F
Viscosity	~4,000 (#3 spindle @ 10 RPM)
Solubility	water insoluble
% Volatiles	~ 40%
Storage	lined metal, glass or lined plastic

These are typical properties not to be used for specification purposes.

PERFORMANCE CHARACTERISTICS

- "Flat" rheological profile from 40ºF through 350ºF for reduced low temperature viscosity build and improved ECD control for the elimination or reduction of mud losses.
  35% reduction of 40ºF HSRR
- Stable to bottom hole temperatures in excess of 350ºF
- Reduction in HSRR for a given LSRR or a reduced PV:YP ratio.
- PARCOM (Class D) / OECD 306 Biodegradation (43%) compliant for global offshore applications
- Maintains HTHP fluid loss control above and below use limits.
- Shear thinning rheological profile for improved ROP
- Compatible with conventional invert emulsion drilling fluid additives and contaminants
- Builds viscosity in clay free systems or with organoclays
- Efficient hole cleaning and suspension properties for sag control

APPLICATIONS

The required concentration of **THIXATROL DW 100** is dependent on the oil/water ratio, base oil type and density of the system as well as type and concentration of surfactants used as emulsifiers and wetting agents and type and concentration of organophillic clay. A fluid with a higher oil/water ratio (i.e. 90:10) will require more **THIXATROL DW 100** than a fluid with a lower oil/water ratio (i.e. 70:30). A higher density fluid will generally require less **THIXATROL DW 100** as compared to a lower density fluid. Generally, concentrations will be in the range of 0.5 to 5.0 pounds per barrel. The ratio of organophilic clay to **THIXATROL DW 100** will typically range from 1:0.25 to 1:1. Viscosity can be built in:

Oil Based & Invert Drilling Fluids

Completion, Packer & Workover Fluids

Clay Free Drill –In Fluids

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THIXATROL DW 100 can be added at the mud plant when building new mud, or can be added directly to the mud pits when building volume during the drilling process. **THIXATROL DW 100** should not be used in combination with any other polymeric rheological additives without first pilot testing. **THIXATROL DW 100** can be used with or without organophilic clay. The addition of some organophilic clay is recommended to achieve the most efficient and temperature stable rheological system.

Recommended organoclays are as follows:

- BHT below 300ºF – BENTONE 155
- BHT above 300ºF – BENTONE 38

The ratio of organoclay and **THIXATROL DW 100** should be maintained while treating at the well. Adequate agitation is necessary when incorporating **THIXATROL DW 100** into the oil based fluid. The amount of shear necessary will depend on the temperature of the synthetic oil, the rate of rheological additive addition, the oil/water ratio, and the amount of solids and/or weight material in the system.

THIXATROL DW 100 PARCOM / BIODEG Data

MW > 600 (bioaccumulation not likely)	**Class D**
Aerobic Biodegradation in seawater	OECD 306 43%
Marine invertebrate (Acartia Tonsa)	ISO 14669 LC50 (48 h)>10,000 mg/l
Marine Algal (Skeletonema Costatum)	OECD 201 EC50 (72 h): 818 mg/l
Marine Sediment (Corophium volutator)	PC 1995 10 day LC50>14,000 mg/kg
Re-worker	
Juvenile Turbot fish (Scophthalmus Maximus)	PC 1995 LC50 (96 h)>818 mg/l
Mysidopsis bahia (Control OBM)	USEPA LC50 (96 hr)- 692,400 ppm
Mysidopsis bahia (3PPB THIXATROL DW100)	USEPA LC50 (96 hr)>600,000 ppm
Leptocheirus plumulosus (3PPB THIXATROL DW 100)	USEPA LC50 (96 hr) ratio [26/103] = 0.2

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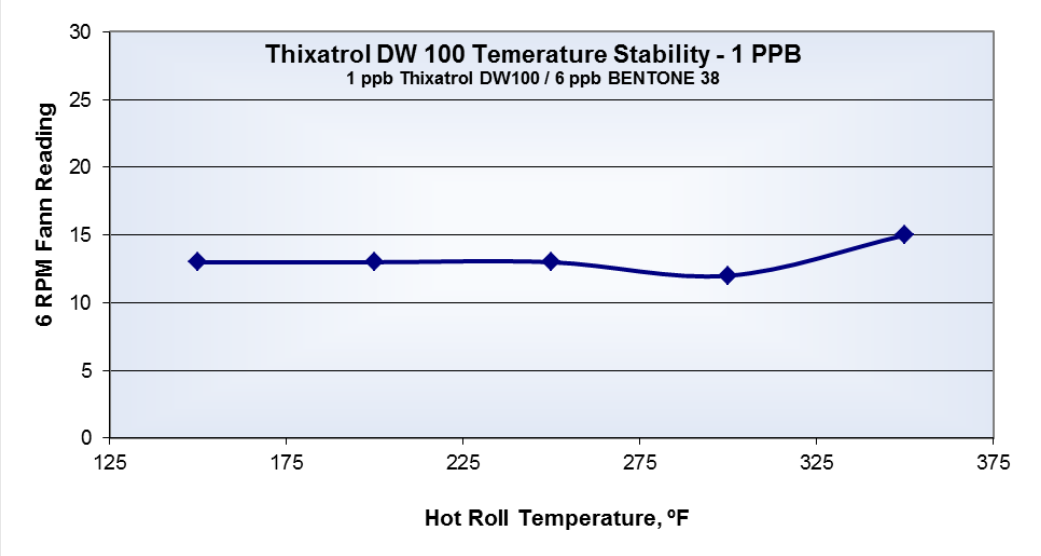
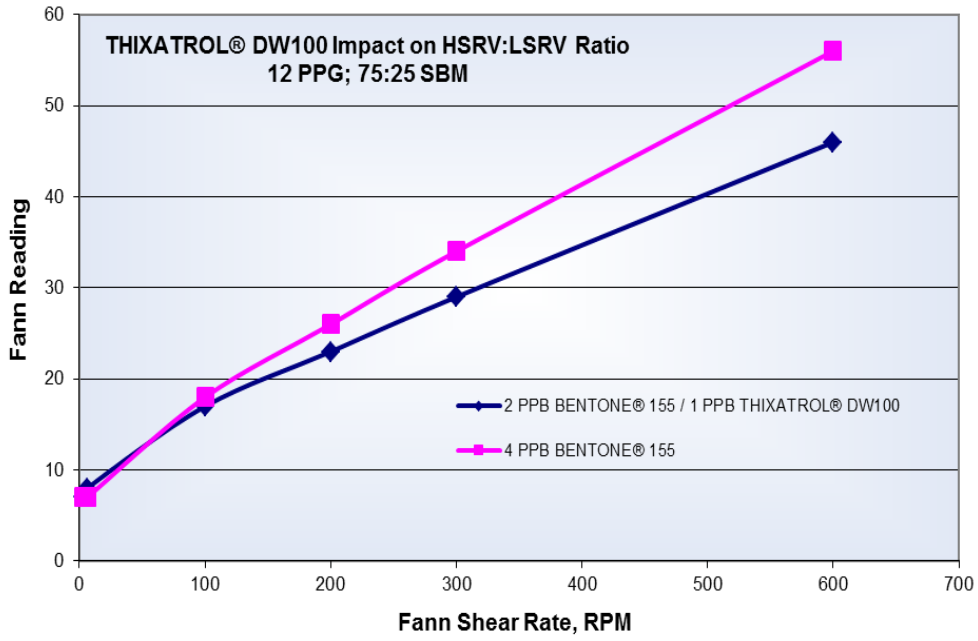
THIXATROL DW 100 PERFORMANCE IN OBM





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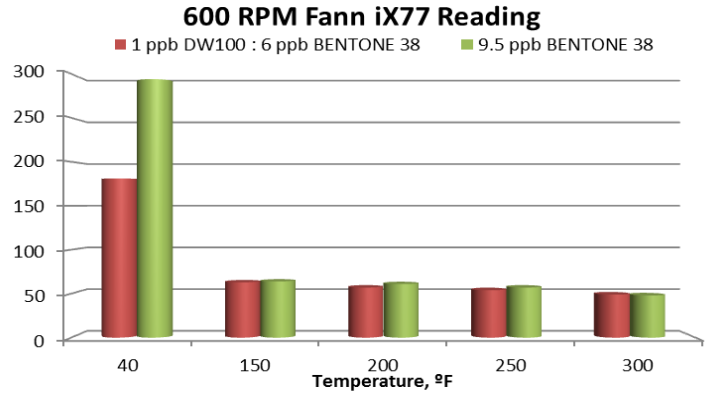
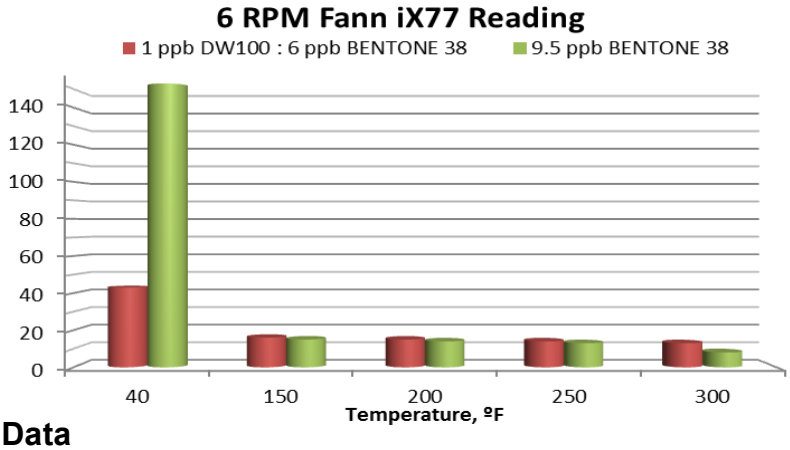


	DW100:B38 (1:6)	BENTONE 38 (9.5)
ECD @ 40ºF	15.04	18.29
ECD @ 150ºF	14.42	14.44
ECD @ 300ºF	14.03	14.12



Health and Safety Data

Before using this product please consult our Material Safety Data Sheet for information on safe handling.

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