



THERMO-TROL-50

HIGH TEMPERATURE MUD CONDITIONER

DESCRIPTION

THERMO-TROL-50 is a formulation of heat-stable water soluble polymers and organic acid reaction products. The product is a precisely engineered blend of high-performance materials which function synergistically to provide excellent control of high temperature-high pressure (HTHP) filtration while imparting rheological stability to water-base drilling fluids. Its typical properties are:

Form	Powder
Color	Grey-Brown to Grey-Black
Bulk Density	40 lb/cu ft (0.64 g/cm ³)

APPLICATION

THERMO-TROL-50 has been successfully used in a wide variety of water-base muds, including fresh, sea, saturated salt, potassium, and calcium-treated (lime or gyp).

THERMO-TROL-50 effectively reduces API and HTHP filtration, improves filter cake quality, improves and stabilizes mud rheology, controls gel strengths, and helps stabilize water-sensitive formations downhole.

Unlike some competitive synergistic polymer blends, THERMO-TROL-50 does not exhibit strong mud-thinning action. Such excessive thinning may cause undesirable effects such as settling of weight material. THERMO-TROL-50's initial effect on rheology is usually neutral or nearly so, depending upon mud type and condition. THERMO-TROL-50 prevents increase in viscosity and gels which may occur with exposure to temperature and contaminants. Competitive resinated lignite products have been shown to degrade rapidly above 325° F (163° F) while THERMO-TROL-50 maintains performance efficiency at temperatures in excess of 400° F (204° C).

THERMO-TROL-50 is a useful and cost-effective mud conditioner over a broad temperature range, giving benefits in low-to moderate temperature applications as well as in high-temperatures. THERMO-TROL-50 is also unsurpassed as a "thermal failure point" extender for applications which push the upper temperature limit of water-base muds.

BENEFITS

1. Superior control of API and HTHP filtration.
2. Improves filter cake.
3. Functions in virtually all water-base muds.
4. Controls and stabilizes mud rheology and gels.
5. Effective over a broad temperature range, from 150° to 450° F (66 to 232° C).
6. Extends thermal failure point of water-base muds.
7. Essentially neutral effect on mud viscosity upon initial mixing. Does not markedly thin or thicken most muds.
8. Resistant to contamination from mono and divalent cations.



- 9. Helps stabilize sloughing shales.
- 10. Superior cost-efficiency to competitive products.

RECOMMENDED TREATMENT

Depending upon mud type, drilling conditions, and desired performance, dosage may range from 1 to 8 ppb (2.9 to 22.8 kg/m³), with typical treatments falling in the 2 to 6 ppb range (5.7 to 17.1 kg/m³). The higher concentrations may be necessary in saturated salt muds. For best performance, maintain pH at 9.5 or higher.

THERMO-TROL-50 should be mixed through a hopper into the suction tank of the rig circulating system, at a rate of 5 to 30 minutes per sack.

THERMO-TROL-50 IN FRESH WATER

MUD PROPERTIES AFTER HOT-ROLLING 16 HOURS @ 350° F (177° C)

	<u>Base Mud</u>	<u>Base + 5 ppb THERMO-TROL-50</u>	<u>Base + 5 ppb Competitive Resin Product</u>
Mud Weight, ppg	12.0	12.0	12.0
Apparent Viscosity, cp	36	42	45
Plastic Viscosity, cp	20	33	34
Yield Point, lb/100 ft ²	32	18	22
10 sec gel/10 min gel	24/80	4/20	7/42
pH	8.5	8.7	8.5
HTHP Filtrate, ml (300° F @ 500 psi)	70	34	36
Base Mud:	1.0 bbl distilled water 0.5 ppb gypsum 25 ppb Wyoming bentonite 30 ppb drilled solids 200 ppb barite 1.5 ppb chrome lignosulfonate Caustic to pH 10.5		

Comments: THERMO-TROL-50 shows superior control of filtration, YP, and gels. At 400° F and above, it has been shown that the competitive resin product deteriorates rapidly whereas THERMO-TROL-50 continues to perform.



THERMO-TROL-50 IN SEA WATER
MUD PROPERTIES AFTER HOT-ROLLING 16 HOURS @ 350° F (177° C)

	<u>Base Mud</u>	<u>Base + 5 ppb THERMO-TROL-50</u>	<u>Base + 5 ppb Competitive Resin Product</u>
Mud Weight, ppg	12.5	12.5	12.5
Apparent Viscosity, cp	59	45	47
Plastic Viscosity, cp	9	19	10
Yield Point, lb/100 ft ²	100	52	74
10 sec gel/10 min gel	49/48	29/33	50/68
pH	8.1	8.2	8.1
HTHP Filtrate, ml (300° F @ 500 psi)	124	35	42
Base Mud:	1.0 bbl sea water		
	50 ppb Wyoming bentonite		
	50 ppb drilled solids		
	220 ppb barite		
	4.0 ppb chrome lignosulfonate		
	Caustic to pH 11.0		

Comments: THERMO-TROL-50 shows superior control of filtration, YP, and gels. At 400° F and above, it has been shown that the competitive resin product deteriorates rapidly whereas THERMO-TROL-50 continues to perform.

THERMO-TROL-50 is a Messina trademark

