

## PRODUCTS TECHNICAL DATA

### 1. PRODUCT NAME : ME-OWET

#### COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

**ME-OWET** is a kind of enhanced wetting reversal agent for oil-based drilling fluid system. It breaks through the physical adsorption mechanism of traditional wetting reversal agent. It mainly changes the hydrophilic surface of solid phase into oil-friendly surface through chemical bonding between me-wet molecule and weighting agent and drilling cuttings surface in oil-based drilling fluid system, so as to effectively improve the sedimentation stability of oil-based drilling fluid system, Controlling the increase of apparent viscosity, the wetting reversal agent has good resistance to temperature and still has good effect at high temperature and high density. It is often used with main emulsifier, auxiliary emulsifier, barite, organic soil and fluid loss reducer to form oil-based or synthetic based drilling fluid system.

**Main Function** : It's used in Low shear and high density solid-free oil - based drilling fluid, ME-OWET changes the wettability of particle surface and improves the suspension of weighting agent And reduce the accumulation of clay particles to ensures neither coalescence nor sedimentation of drilling fluid happen.

Mainly used in Diesel oil - based drilling fluid system as wetting reversal agent. Reminding: **ME-OWET** with better wettability in Diesel oil phase may not be applicable in another oil phase, should be evaluated by barite sedimentation method.

◆ recommended dosage is 1.0-2.0%.

### 2. PRODUCT NAME : ME-GEL

#### COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

**ME-GEL** is a kind of organic bentonite, which has good dispersibility, suspension and slurry making properties in oil-base mud. It is generally used as viscosifier, fluid loss reducer and pipe stuck releasing agent.

ME-GEL has high gel efficiency, good dispersibility and stable viscosity. It is suitable for OBM drilling fluid systems, such as diesel, mineral oil, synthetic oil and modified vegetable oil. ME-GEL also has good adaptability to high temperature up to 200°C.

The chelating technology is used to optimize the quaternary ammonium salt. In the process of clay lipophilic, the chelating agent is adsorbed on the surface of clay particles and the lipophilic end of quaternary ammonium salt. Due to the role of the chelating agent, the adsorption stability of quaternary ammonium salt on clay is improved, and the desorption effect of quaternary ammonium salt at high temperature is weakened, so that the adsorption capacity at high temperature, the dispersibility of organic soil and the electrical stability of W / O emulsion are good.

- ◆ Appearance: Light yellow free flowing powder .
- ◆ Recommended dosage: when preparing water in oil drilling fluid, the dosage of hfgel-40w is generally controlled at 25-40kg / m<sup>3</sup>, which can also be adjusted according to actual needs.

## Application Case

ME-OWET : Wetting agent in High Density OBM

ME-GEL : Viscosifier agent in High Density OBM

CNPC Chuanqing Drilling & Exploration , Location: Anjihaihe oil well, Junggar Basin .

The formation of Anjihaihe formation is mainly composed of mudstone and clay deposit. It is characterized by high material content, strong water sensitivity, developed fault zone and high formation pressure

The maximum force coefficient is 2.55. When drilling in mudstone, it was difficult to control the WBM with high density and occurred the pipe stuck. During the drilling process of Huo-10 well, the operator have designed the potassium-calcium based PRT organic salt drilling fluid, unfortunately downhole accidents occurred frequently, there were total 9 times of pipe stuck , 35 times of large and small lost circulation occurred. The lost time was 36%, and the drilling period have reached 336 days,

Finally operator determined to change to solid high density OBM system. And therefore [ME-OWET & ME-GEL](#) was order.

### **Followed formulation was selected:**

54% concentration of diesel oil + 11% Compound Emulsifier + 5.0% ME-OWET + 2.0% ME-GEL + 10% Polymer based FL Control agent + 4.0% LCM + 4.8% water + 1.8% KCL + 4.0% lime + Barite. Density: 2.5g/cm<sup>3</sup>.

### **Followed target and progress have been reached:**

Using oil-based drilling fluid technology and downhole vertical drilling system, the ROP reached 14.82m/h, which was 900% higher than that of Huo 001 well, who have selected the water-based drilling fluid.

The use of [ME-OWET](#) wetting agent oil-based drilling fluid has provided good lubricity, reduced the annular circulation resistance, improved the safety density window, and effectively reduces the risk of lost circulation and kick