

PRODUCTS TECHNICAL DATA

1.PRODUCT NAME : Organic Amine Treated Lignite ME-LIG

COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

ME-LIG is Organic Amine Treated Lignite or Lignite amide. It's fluid loss control & Shale inhibitor agent for OBM invert emulsion drilling fluid systems. Its used for filtration control when asphaltic materials are not desirable. **ME-LIG** is not used in organoclay-free high performance invert emulsion systems. **ME-LIG** is effective at temperatures up to 180°C or higher.

ME-LIG can act synergistically with the emulsifiers in conventional invert emulsion fluid systems to enhance the overall emulsion and thermal stability of the fluid system

Humic acid reacts with potassium hydroxide at certain temperature and alkaline environment. It not only has strong inhibition and high temperature stability, but also has the function of viscosity reduction and filtration reduction of humic acid treatment agent. It can be used in various water-based drilling fluids.

Main feature:

- 1-Good shale inhibition;
- 2-High temperature stability, temperature resistance higher than 180°C, suitable for deep and ultra-deep wells;
- 3-It has good viscosity reduction and filtration loss; Non-toxic, conducive to environmental protection;
- 4-Helps promote stability of invert emulsion fluid systems
- 5-Low fluorescence, can be used in well exploration.

Typical Properties

- » Appearance: Gray to black powder
- » Bulk density, compacted: 705kg/m³)
- » Specific gravity: 1.8
- ◆ Recommended dosage is 6-20kg/m³ by volume .Concentration will depend on the degree of filtration control desired.

2.PRODUCT NAME : Macromolecule Elastic particles Seepage Control agent

COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

ME-SEAL is Polymer elastic particles plugging agent. It's irregular water chestnut shaped Elastic Particles, can absorb oil and expand. Through special surface treatment, optimize the particle size and gradation ,provide the bridging effect by different particle sizes and expanded particles. With its excellent compression deformation and resilience, the simultaneous elastic deformation of the plugging plug can be formed when the downhole pressure fluctuates and the fracture opening changes, so as to avoid the structural damage of the plugging plug and the re-leakage of drilling fluid. The recovery rate of compression deformation can be more than 90%, and the temperature resistance can be up to 180 °C. It can be mixed with rigid lost circulation agent. It can effectively fill the core throat and micro fractures, seal the formation, effectively reduce the leakage of oil-based drilling fluid, improve the pressure bearing capacity of the wellbore, and stabilize the wellbore.

Applications/Functions

Provides lost circulation treatments for a wide range of induced and natural fractures

- » Offers multiple particle sizes for customized treatments
- » Is suitable for use in water-based and non-aqueous drilling fluids
- » Moderate density, not easy to settle and float, suitable for 1.1 ~ 2.5g/cm³ density range of drilling fluid uniform distribution of plugging slurry.

Items		Result
Moisture, % ≤		10
Particle mass fraction of 1.0mm ~ 3.2mm, % ≥		90
corrosion-resistant	Mass ratio before and after immersion in diesel oil, % ≥	90
	Mass ratio before and after soaking in alkali solution, % ≥	90
Sealing pressure capacity (steel ball bed), MPa ≥		5

Recommended Treatments

- 1.**ME-SEAL** can be used as a background preventative material for seepage and lost circulation control at 29-114 kg/m³ .
2. LCM pills for spotting over thief zones or on bottom prior to trips, 140-300 kg/m³ .
3. Treatments use engineered combinations of loss preventative materials consisting of 60-140 kg/m³ selected from **ME-SEAL**, **ME-RIGID** ground marble and other lost circulation control materials. To impart resiliency to these combination treatments, include at least 20% by volume **ME-SEAL** , or greater.

Application Case

ME-LIG : Shale Inhibitor

ME-SEAL: Elastic particles Plugging agent

ME-OWET: Wetting reversal agent

SINOPEC Jiangnan Drilling & Exploration , Location: Fuling, Jiaoshi Dam shale gas block, sichuan.

The strata of jiaoshi Dam shale are developed, which belongs to hard and brittle mud stone, easy to flake off and drop blocks, and cause underground accidents.

The Operator has determined to use OBM (Diesel based), to assure to ensure the stability of borehole wall and lubrication performance of drilling fluid.

The formulation as below:

Formulation	%
Premary Emulsifier	25-30
Secondary Emulsifier	15-20
Fluid loss control agent ME-LIG	25
Wetting reversal agent ME-OWET	25-0
Viscosifier -Organic Bentonite	15-20
Alkalinity agent , ME-LIME	25-30
OBM Filtration Loss Control Agent	15-20
CaCl ₂	26% water solution
Bentonite	By demand

The application of more than 200 Wells in Jiaoshi Dam area shows that the drilling fluid has the characteristics of stable performance, strong inhibition, good sidewall stability, small diameter expansion rate, strong lubricity, low friction and so on .