



## PRODUCTS TECHNICAL DATA

### 1. PRODUCT NAME : Swellable/ Hydratable LCM's Combinations, ME-CROSS COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

**ME-CROSS** is formulated with a high-molecular weight anionic polymer with cross linking that produces a rigid, robust gel structure ideal for shutoff treatments into fractures, regular and high permeability formations. This temperature-activated high molecular weight polymer provides a rubber-like gel to seal problem areas. The low viscosity prior to cross linking allows shut off in matrix permeability of less than 750 millidarcies. It is a cost-effective and easily deployed, providing a reliable and effective solution for operators.

Effective temperature range from 60° F to 350° F, salt resistant to 5000mg/L

#### Function of seepage & LCM in drilling and workover applications.:

The polymer and cross-linking agent, a broad range of the LCM is included to slow seepage of the polymer solution into the formation.

#### Function of water shutoff for Profile control:

In the oilfield with high water cut and large pore development, it is used for profile control to improve water injection effect. The volume of plugging agent is unchanged when encountering oil, and then it expands and softens after absorbing water. Under the action of external force, deformation occurs and migrates to the deep part of the formation, resulting in flow resistance in the high permeability layer or large pore channel, which makes the subsequent injection water diversion and diversion, so as to achieve deep profile control and improve the effect of water flooding.

#### Benefits:

Low viscosity simplifies injectivity ; Slow down the leakage rate, temporarily plug the leak zone, Acid soluble; Reverse permeability is good .No drill-out problems, Seals perforations capability in water zones is good.

## Application Case

ME-CROSS : Swellable/ Hydratable LCM's Combinations  
CNPCIC , Location: Burial Hill, Chat . Oil well # GW-ML35

Chadian buried hill is a weathered crust stratum with well-developed fractures, parallel alignment style formation , multi porosity and low formation pressure coefficient. Conventional plugging agents have been used in several wells of well # baobab C2-2 and well # baobab c1-16 in buried hill. However, there were still some complex problems such as serious lost circulation, collapse occurred. As a result, normal logging could be continued, cuttings cannot be brought out of the wellbore, and drilling was hindered.

ME-CROSS was ordered.

**Followed formulation was selected:**

Made 10 m3 of 10% concentration plugging fluids for moderate seepage & leakage

10 m3 base fluids +0.5t ME-CROSS +0.5t LCM agent

Made 10-20m3 of 20% concentration plugging fluids for lost circulation

10 m3 base fluids + 1.0T ME-CROSS +1.0t LCM agent

**Followed Operation have been executed:**

Reverse squeezed from the inside of the drill pipe or backward squeezed from the annulus to the leaking zone (without plugging the inner diameter 20 mm above). After pumping the plugging fluids, lifted the drilling tool above the safety interface.

According to the lost circulation rate change and plugging situation, kept static plugging and shut in for 200-300psi and then add heavy pressure.

Finish until the drilling fluids circulation is recovered or the leakage rate is slowed down.