HYDRO-PLUG®
Lost Circulation Material
Engineered, Composite Solution

CHALLENGE

Lost circulation continues to be one of the most prevalent operational issues faced today and is a leading contributor to drilling non-productive time. The solutions used to combat these global challenges are optimized according to formation types, drilling fluid loss rates and the fluids in which the technologies are deployed. Not all lost circulation events can be prevented and often require the use of specialty applications, provided in the form of a lost circulation “pill.” Once a lost circulation event occurs, it is essential to apply the appropriate fluid solution as quickly as possible to minimize non-productive time and maximize wellbore value.

OVERVIEW

HYDRO-PLUG® lost circulation material (LCM) is an Engineered, Composite Solution designed to be applied as a hesitation squeeze to mitigate partial to severe drilling fluid loss rates in any non-reservoir formation. It differs from other hesitation squeeze products because the formulation contains a specialized hydratable polymer and reaction retarder to control swelling. These additives allow for the pill to be easily pumped through any drill string, yet still able to seal large subterranean apertures after exiting the bit.

FEATURES

» Contains hydratable, swelling polymer for sealing large subterranean apertures
» Resistant to downhole pressure fluctuations due to swag/surge, ECD spikes, wellbore ballooning/breathing, mechanical abrasion, bit reaming or mud erosion
» Temperature activated and effective up to 400°F
» Seals fractures up to 2,500 µm or greater
» Can be pumped through bits and motors

BENEFITS

» Cost-effective solution
» Increases drilling performance
» Reduces non-productive time
» Helps reduce drilling fluid loss associated with cementing
HYDRO-PLUG LCM was engineered to be delivered to the loss zone with a controlled swelling mechanism. After the optimized formula has been pumped and spotted, the additive in the engineered pill efficiently provides “fracture-tip screen-out” and prevents propagation of the fractures. Upon the temperature activated hydration of the swelling polymer, a firm seal remains within the loss zone, rather than at or near the face of the wellbore. This helps prevent any further whole fluid loss to the formation, and also minimizes the possibility of the seal being removed during drilling operations or later remedial loss treatments. It can be used to stop losses in either induced or natural fractures, interwell communications or as a squeeze treatment through the bit if the primary cement job does not provide complete isolation.

Utilizing a pill of HYDRO-PLUG LCM helps save rig time and operational costs, requiring no trips out of the hole and no special pumping or mixing equipment. For maximum hydration, a simple pill (i.e. mixed in fresh water) is recommended. It can be applied to loss zones in both permeable and impermeable non-reservoir formations.

APPLICATIONS

HYDRO-PLUG LCM is designed to be used as a dedicated pill and not as background lost circulation material in the whole drilling fluid. The most efficient application of the hydratable pill requires a gentle hesitation squeeze into the loss zone. A simple pill of HYDRO-PLUG LCM (i.e. not mixed in the drilling fluid) should be prepared and operational guidelines for the pill mixing procedures in clean water should be consulted. Water-based pills are highly recommended in wellbores where both water and oil/synthetic based drilling fluids are being used.

After being mixed and pumped through any drill string configuration, an engineered HYDRO-PLUG LCM pill is spotted across the loss zone. Upon its temperature-activated hydration, HYDRO-PLUG LCM pill forms a competent seal within the source of lost circulation that eliminates further whole fluid loss.