Reliable Degradation Performance of the KDP in a Full Wellbore Trial

Overview

An operator in the Haynesville area reached out to Kureha Energy Solutions (KES) requiring a reliable 10k dissolvable frac plug that can degrade in their harsh wellbore conditions for their plug-and-perf frac operations. The operator requested to run the Kureha Degradable Frac Plug (KDP) in a full wellbore application to help eliminate coiled tubing and the costs and risks of mill-out operations. Eliminating coiled tubing operations can save a customer $50,000-$70,000 per day, over $100,000 per well.

Solution

The KDP is designed to eliminate the risk of costly plug mill-out operations. It is manufactured from the industry's original degrading material that is field tested and highly suitable for frac plug material. The KDP hybrid design includes the degradable polymer (Polyglycolic acid, PGA) and dissolvable sealing element that predictably degrade to provide a clear wellbore for production without intervention and assist in reaching longer laterals that coil tubing cannot reach.

The degradation behavior of PGA and the degradable sealing element is much simpler than 100% Mg alloy frac plugs. PGA is temperature dependent only, whereas Mg alloy degradation depends on temperature, chloride level, and can be affected by other well conditions, such as buried in sand. The KDP can degrade in all water types, oil, water moisture, and sand.

Results

The 4.43" KDP was run full wellbore in 5.5" 20# casing. During the frac treatment, tracers were pumped downhole into several stages. No problems were reported or seen during the frac operations, and the operator was very pleased with the KDP performance. The KDP has a reliable sealing performance due to its two slip design and traditional full-length sealing element.

After frac, the operator soaked the KDP's for 7 days. Once the recommended 7 day soak time was achieved, the operator slowly started production. The well produced successfully with no debris problems and tracers that were pumped into the well during frac operations were successfully recovered. After a week of production, the operator conducted a cleanout to observe if the productivity of the well is increased or not. The productivity did not change, proving that the trial was successful. No tags or plug parts were reported or recovered during the cleanout.

The results of this trial are a good example of the degradation stability of the KDP. PGA based degradable plugs degrade stably under a variety of conditions. PGA degradation does not stop, even in the conditions that have less liquid water or have a lot of sand. Please contact KES for more information in regards to your frac plug solution today.

KDP Features

- PGA based plug
- Traditional Frac Plug Design
  - Dual Slips
  - Large Sealing Element
  - Bottom Set Plug
- Max differential pressure of 10,000 psi
- Optimized pumpdown speeds
- BHT range of 150F – 450F
- Ball-in-place and pumpdown ball options

CASE STUDY DATA

PLUG LOCATION
Full Wellbore

WATER TYPE
Fresh Water

REGION
Haynesville

CASING SIZE
5.5'' 20#

BOTTOM HOLE TEMPERATURE
260 F

Soak Time
7 days

Initial Production Time
7 days

©2026 Kureha Energy Solutions, LLC