

Zonal Coverage Acid (ZCA™) System

Crosslinked Acidizing Fluid System for Carbonates

In the past, the use of crosslinked acidizing fluids was limited. Leak off of the acid was common and treatments required greater pumping horsepower. Losing acid to wormholes prevents proper etching of the fracture, limiting conductivity.

The ZCA™ system was developed for fluid-loss control in fracture acidizing and diversion in matrix acidizing and horizontal wells.

Benefits

The ZCA system can provide the following benefits:

- Helps stop wormhole growth for greater acid coverage
- Fluid-loss is 30 to 80% lower for ZCA system fluids than uncrosslinked gelled acids
- Can be foamed using N₂ or CO₂
- For optimum acid distribution in long pay intervals
- Can be used up to 300°F (149°C)
- Can provide fluid loss control in fracture acidizing treatments and diversion in matrix acidizing treatments
- The crosslink that forms in ZCA system is not permanent, but disappears over time as the hydrochloric acid spends more completely

Fracture Acidizing

The ZCA system provides fluid-loss control without the need for additional particulate additives such as silica flour or sand. The system works by crosslinking when the acid begins to leak off, stopping wormhole growth and controlling the fluid loss. As a result, more live acid remains in the fracture to provide adequate etching, helping ensure proper conductivity for hydrocarbon production.

Diversion in Matrix Acidizing and Horizontal Wells

The ZCA system also can be used to provide diversion in matrix acidizing for horizontal wells in carbonate formation.

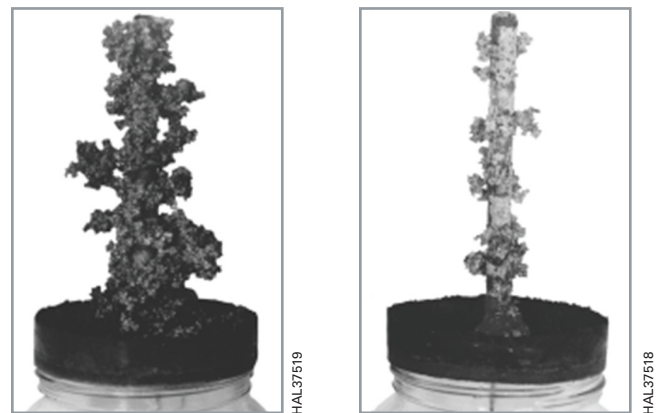
When acid-stimulating horizontal wells, the acid is generally placed across the entire treatment zone, requiring diversion.

ZCA system controls contact with near-wellbore rock without the need of particulate additives, conserving the acid for greater zonal coverage along the wellbore. For best results, use the ZCA system in conjunction with coiled tubing.

Case History

In West Texas, six wells were producing at less than optimum performance, only 1.5 to 2 MMcf/D. BHTs ranged from 180 to 200°F while BHPs ranged from 2,500 to 2,800 psi. After careful analysis of the well and formation conditions, Halliburton recommended fracture acidizing treatments using the SUPRA CE sustained production acidizing technique in conjunction with the Zonal Coverage acid system. For these six wells, treatment volumes ranged from 12,000 to 15,000 gal.

Post-treatment production ranged from 2 to 7.5 MMcf/D for an average 4.1 MMcf/D—over twice the production before treatment. Approximately 30 additional wells were treated and produced similar results.



Linear gels (left) permit the creation of large wormholes through acid spending, while ZCA system (right) limits wormhole growth to conserve acid for better zonal coverage.

For more information about how ZCA™ system can help your acidizing treatments, contact your local Halliburton representative or email stimulation@halliburton.com.

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