

Carbonate Acidizing Portfolio

EXPERT SOLUTIONS FOR OPTIMUM STIMULATION

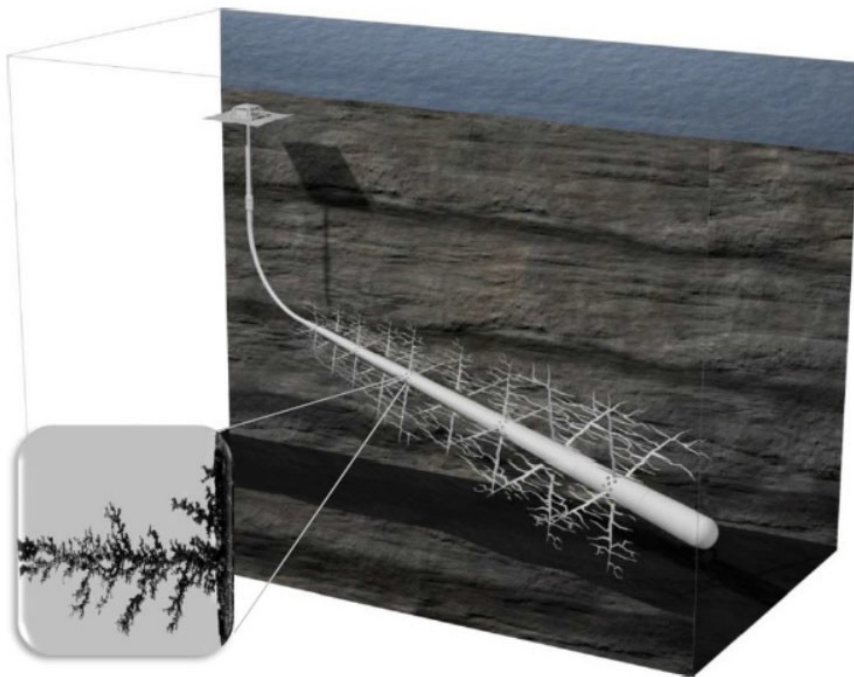
OVERVIEW

Optimized acid treatments begin with an in depth understanding of rock properties and reservoir fluids. Carbonate acidizing services provide a systematic approach to understanding these factors to effectively design an engineered treatment, delivering long-term production increases.

For near-wellbore cleanout, matrix acidizing, or acid frac treatments, Halliburton offers state-of-the-art testing and analysis techniques to tailor customized acidizing fluids and pumping schedules to accommodate the reservoir and wellbore conditions.

A comprehensive carbonate acidizing portfolio helps simplify the fluid selection process by providing versatile acid systems engineered for conditions encountered in carbonate formations throughout the world.

Combined with specialized placement techniques, these acid systems have proven effective in even the most complex matrix acidizing and acid fracturing scenarios.



Halliburton provides an engineered approach to carbonate acidizing to ensure long-term production increases.

ROUTINE CORE ANALYSIS

- » **Core Description**
Provides visual grain size distribution, grain integrity, fracture presence in rock
- » **Petrology (XRD, SEM)**
Provides mineral content, pore space character, grain framework structure of rock
- » **Acid Solubility**
Information on acid soluble material present in the rock
- » **Porosity-Permeability**
Rock characteristics in terms of fluid flow properties and calibration of logs

SPECIAL CORE ANALYSIS

- » **Matrix Injection – Wormholing**
Compares stimulation efficiency to increase permeability; Pumping rate
- » **Acid Frac – Rotating Disc Test**
Determines reaction rate, reaction order, activation energy
- » **Acid Frac – Acid Etching Test**
Determines acid recipe for good etching pattern and conductivity
- » **Acid Frac – Rock Mechanics**
Analysis provides elastic properties of rock

HALLIBURTON CARBONATE ACIDIZING FLUIDS

» X-Tend™ Acid Stimulation Service

Low-viscosity, polymer-free, retarded acid that allows deeper penetration of live acid into the formation, increasing acid efficiency.

» Carbonate Completion Acid (CCA™)

An optimized acid blend, effective on even the most difficult oils (sludging, asphaltenic oils).

» Carbonate Stimulation™ Acid (CSA)

A viscous acid system for improved fluid-loss control and deeper penetration of live acid.

» Zonal Coverage Acid (ZCA™)

A gelled acid system that crosslinks, providing higher viscosity to reduce leak off and improve zonal coverage for optimum acid distribution in long pay intervals.

» Zonal Coverage Acid II (ZCA™ II)

A non-polymeric gelled acid system for self-diverting acid treatments, providing excellent diversion properties to optimize acid fluid placement.

» Carbonate Emulsion™ Acid (CEA)

An emulsified acid system with superior wormholing characteristics. Delays acid spending in the near-wellbore region, allowing deeper penetration of live acid into the formation.

» AeroBoost™ Stimulation Service

Stable-foamed acid system that optimizes acid stimulation treatments in depleted formations and challenging completions. Provides enhanced diversion properties and fines recovery enhancement.

» Hot Rock™ Acid System (HRA)

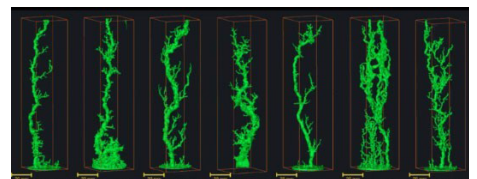
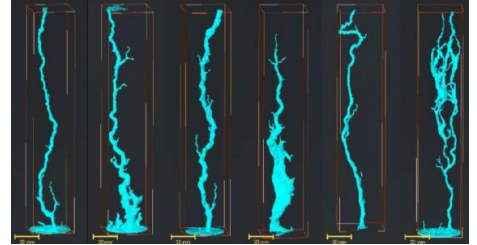
High temperature, low-corrosion organic acid system with dissolving power to eliminate secondary precipitation problems and maintain maximum dissolving power.

» KelaStim® Plus Service

Chelant-based acid system for stimulating high-temperature carbonate or mixed carbonate/sandstone formations. Reduces risk of rock deconsolidation compared to high-strength HCl acid fluids and has the lowest corrosion characteristics of all acid stimulation blends.

» Paragon™ Acid Dispersion (PAD™) Acid

A blend that dissolves organic residues while removing acid soluble scale deposits. Reacts with the formation to increase permeability.



For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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