Schlumberger

$MaxCO_3$ Acid

Degradable diversion acid system

APPLICATIONS

- Reservoirs with high permeability contrasts and/or natural fractures
- Bottomhole temperatures between 175 and 250 degF [79 and 121 degC]
- Carbonate oil or gas wells
- Open hole or cased hole intervals, regardless of deviation

ADVANTAGES

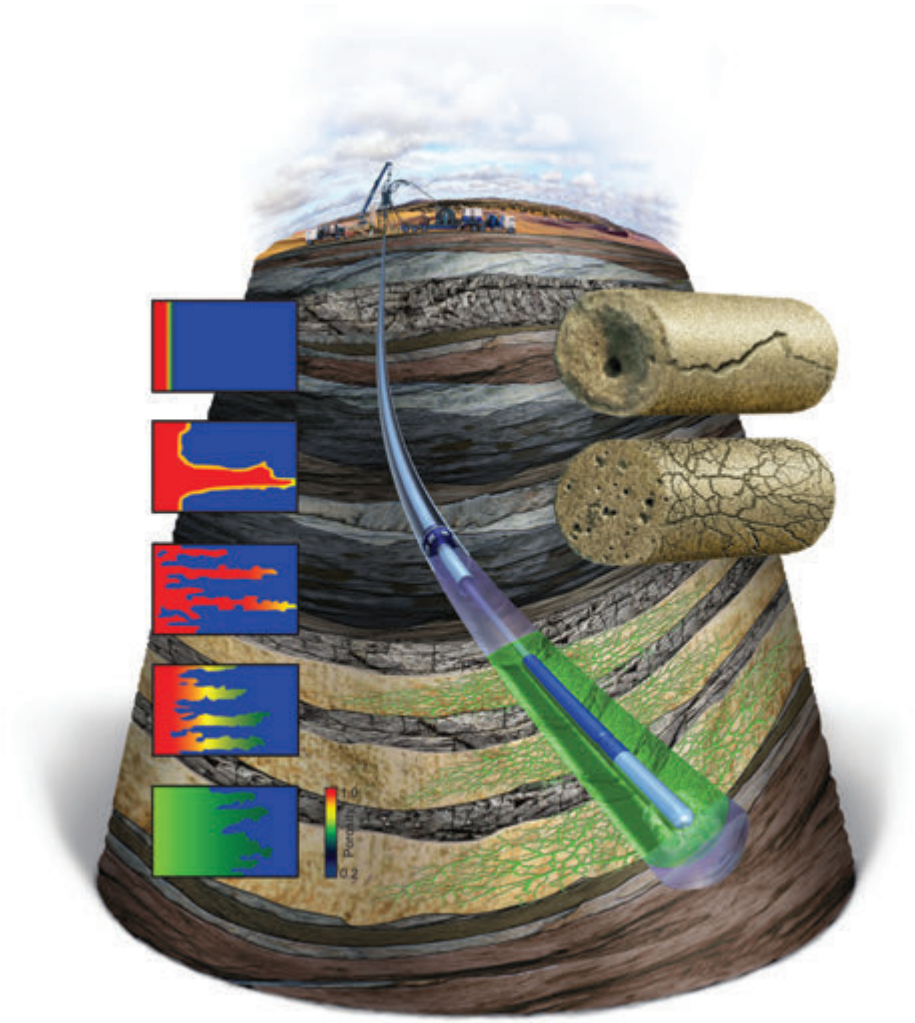
- Degrades completely, eliminating risk of costly cleanout interventions
- Targets permeability contrasts, allowing superior zonal coverage
- Effectively controls leakoff
- Requires lower treatment volumes and less well cleanup time

FEATURES

- Diverts effectively at low treatment rates
- Continues to stimulate as it degrades
- Can be bullheaded or pumped through CT
- Can be pumped with most common acid stimulation systems
- Can be batch mixed for small volume jobs or mixed on the fly for larger treatments

Diversion in challenging reservoirs

Stimulating high-permeability-contrast and naturally fractured reservoirs is challenging. Effective diversion is required during treatment to ensure that the largest possible surface area of the reservoir is contacted and exposed to stimulation fluids. The diversion, however, must be temporary and nondamaging to the reservoir or the natural fracture network. To meet this challenge, Schlumberger developed the innovative $MaxCO_3$ Acid* degradable diversion acid system.



$MaxCO_3$ Acid system diverts fluid from thief zones without reducing production from natural fractures.

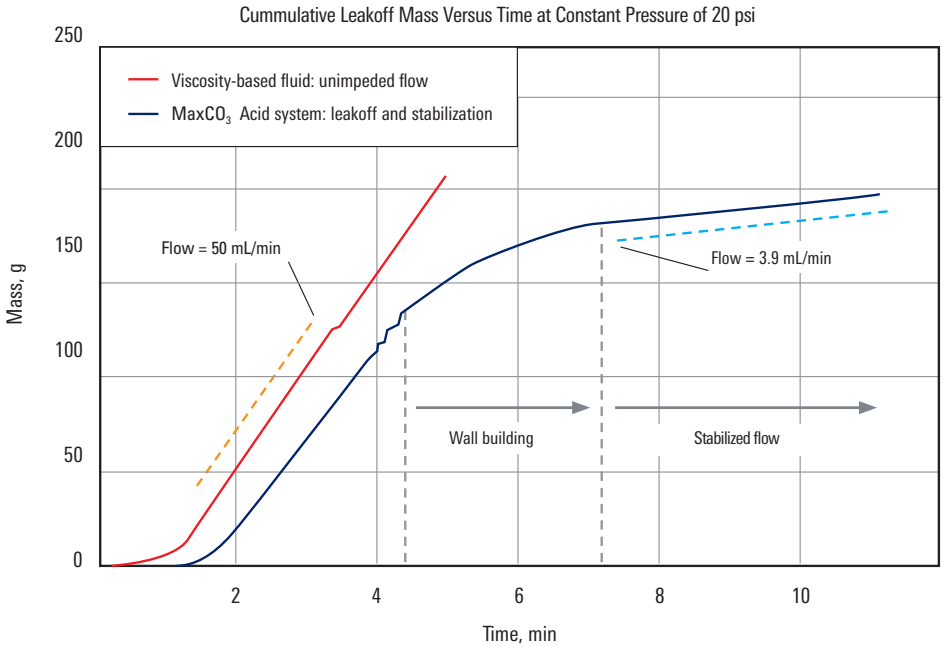
$MaxCO_3$ Acid

A degradable diversion system

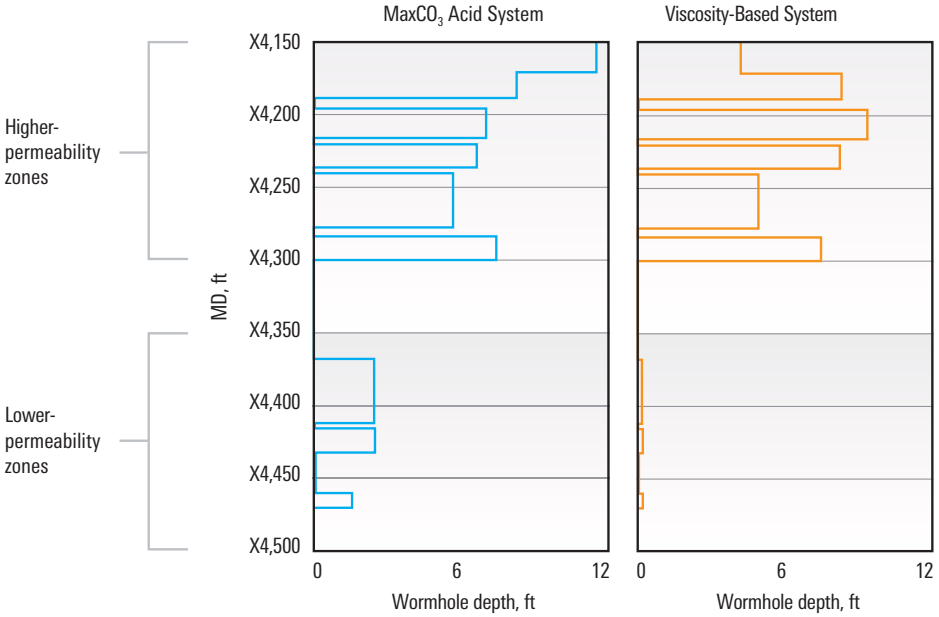
In laboratory experiments, the $MaxCO_3$ Acid system outperformed conventional viscosity-based fluids in leakoff control and wall-building capabilities. While conventional viscosity-based fluids can be injected continuously through an aperture with unimpeded flow, the $MaxCO_3$ Acid system reduces and eventually stabilizes fluid leakoff.

Significant pressure responses have been consistently observed in the field following placement of the $MaxCO_3$ Acid system stages.

After treatment, the base fluid systems break with different mechanisms on contact with hydrocarbons from the reservoir or with preflushes or overflushes containing a mutual solvent. The fibrous component, which degrades as a function of temperature and time, also requires the presence of the small amount of water supplied by the base fluid to degrade completely. The soluble by-products then flow back and can be handled at surface using conventional techniques, while the undamaged, stimulated reservoir is producing.



Flow reduction—from 50 mL/min to 3.9.



More penetration in lower-permeability zones using $MaxCO_3$ Acid system.

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