Schlumberger

Composite Pill

Enhances wellbore coverage

APPLICATIONS

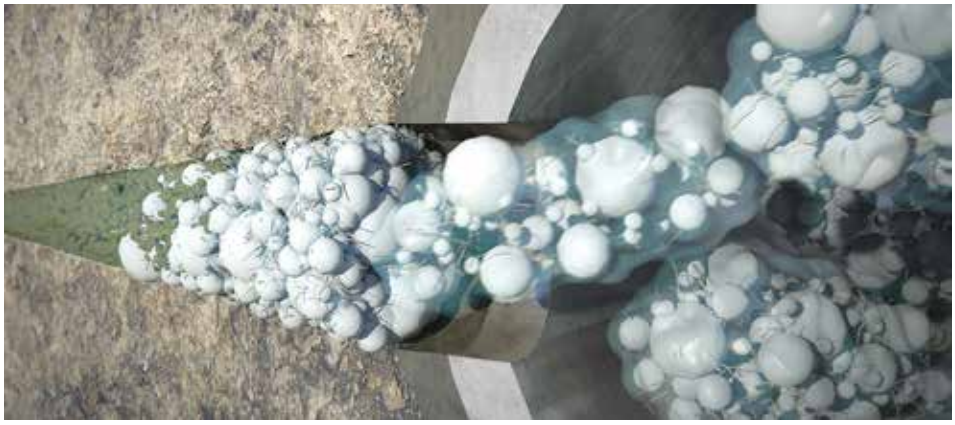
- Temporary near-wellbore isolation for hydraulic fracturing treatments in
  - New completions
  - Refracturing operations
  - Poorly cemented completions
  - Compromised casing situations
  - Cased hole with perforations or jetted slots
  - Openhole completions
  - Producers and injectors

BENEFITS

- No residue after degradation
- Reliability in plugging performance, irrespective of aperture and configuration of heterogeneities
- Efficient wellsite delivery

FEATURES

- Multimodal particle blend for optimal plugging and minimum permeability
- Fibers for transport downhole without particle segregation, resulting in improved plugging performance
- Temporary isolation of perforations and wide fractures using a small volume of large-particle composite pill material
- Enhanced conductivity and superior diversion with fully or partially degradable pills
- Suitability in downhole temperatures ranging from 70 to 400 degF [21 to 204 degC]



An engineered composite fluid of degradable particles and fibers temporarily isolates fractures at the wellbore.

Composite pill with large particles.

A composite pill of degradable particles and fibers

The BroadBand Sequence* fracturing service features engineered pills comprising a proprietary blend of degradable particles with multimodal size distribution and fibers. The pill is designed so that the large particles are intercepted at the entrance of a fracture, while smaller particles reduce permeability to create temporary isolation. The fibers ensure the integrity of the blend from surface to near-wellbore area and enhance the bridging mechanism.

The degradation of particles and fibers is activated by temperature, eliminating the need for further intervention. The pill comprises particles and fibers that degrade without leaving any residue. The standard composite pill, with fully degradable components, is applicable in formations ranging from 70 to 400 degF [21 to 204 degC].

Enhanced-conductivity partially degradable composite pill.

Increase near-wellbore conductivity with a partially degradable pill

An enhanced-conductivity pill blends degradable particles and highly conductive spheres chosen to enhance diversion strength and ensure near-wellbore conductivity. They are combined with degradable fibers, which prevent dispersion of the particles to ensure consistent isolation. After treatment, the particles and fibers fully degrade, leaving the spheres in the near-wellbore area to ensure superior well connectivity to the extended fracture and reservoir.

The partially degradable enhanced conductivity composite pill is applicable in formations ranging from 70 to 400 degF [21 to 204 degC].

Composite Pill

The conventional reservoir diversion pill is designed to promote development of multiple fractures.

Improve diversion performance in conventional reservoirs

Conventional reservoirs will benefit from an engineered dynamic diversion pill that combines degradable multimodal particles, fibers, and nondegradable particulates. Degradable fibers function as a suspension agent for particles and help to maintain pill integrity during delivery. This conventional reservoir diversion pill is designed to improve diversion efficiency by minimizing fluid loss into open fractures and increasing the pressure differential to promote initialization of additional fractures in higher-stress areas of the formation.

This pill is compatible with the complete portfolio of Schlumberger fluids and additives used in fracturing operations and can be deployed in formations at temperatures ranging from 160 to 230 degF [71 to 110 degC].

The ultralow-temperature diversion pill improves flexibility and reliability in formations with temperatures as low as 70 degF.

Optimize diversion in ultralow-temperature reservoirs

An ultralow-temperature composite diverter pill combines dissolvable nonpolymer particles, optimizing near-wellbore diversion in challenging formations with temperatures below 140 degF [60 degC]. Dissolution timing is tunable, offering additional flexibility during fracturing operations. The result is much more rapid flowback and production turnaround as compared with waiting for conventional diverters to degrade.

The ultralow-temperature diverter pill can be delivered with degradable fibers to improve particle transport and prevent segregation of the particles, ensuring consistent isolation.

This pill is optimal for applications in formations with temperatures from 70 to 140 degF [21 to 60 degC].

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