

ClearPAC HD

Polymer-free fluid for high-density gravel pack

ClearPAC* gravel-packing fluids are water-base systems composed of a viscoelastic surfactant (VES) and a brine. The fluids are designed for batch- or continuous-mix operations.

Suitable for temperatures up to 300°F [148.9°C] and densities up to 14 ppg [1.68 sg], ClearPAC HD fluid works with calcium chloride (CaCl₂) and a combination of calcium chloride and calcium bromide (CaBr₂) brine and is therefore the preferred gravel-packing fluid for well control. Simply adding the gelling agent J577 to brine prepares ClearPAC HD fluid. Unlike crosslinked polymer-base fluids, full fluid viscosity is achieved once the surfactant is completely dispersed in the brine. Viscosity develops rapidly without shear degradation. Operational simplicity is a principal benefit of ClearPAC technology.

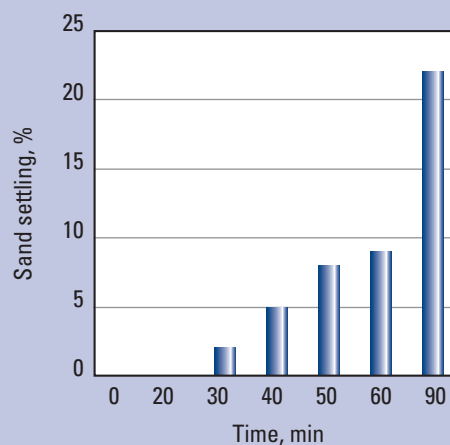
ClearPAC HD fluid exhibits full viscosity breakdown upon contact with most crude oils. Low friction pressures make the fluid ideal for the Alternate Path® technique for gravel packing long horizontal intervals.

Compatibility with chelating agents such as U820 allows simultaneous gravel packing and filtercake cleanup in openhole completions below 180°F [82°C] and for densities up to

12 ppg [1.44 sg]. With high-density brine up to 14 ppg [1.68 sg], ClearPAC HD fluid offers a highly reliable gravel-packing system in high-pressure, high-temperature environments without sacrificing productivity.

With a known tolerance to oil-base fluid contamination, ClearPAC HD fluid is the choice for water-base gravel-packing fluid in wells drilled with oil-base muds.

ClearPAC HD sand-suspension properties at 150°F [65.6°C].



Applications

- Gravel or frac packing wells in circulating or squeeze modes
- Temperatures up to 300°F [148.9°C]
- Densities up to 14 ppg [1.68 sg]

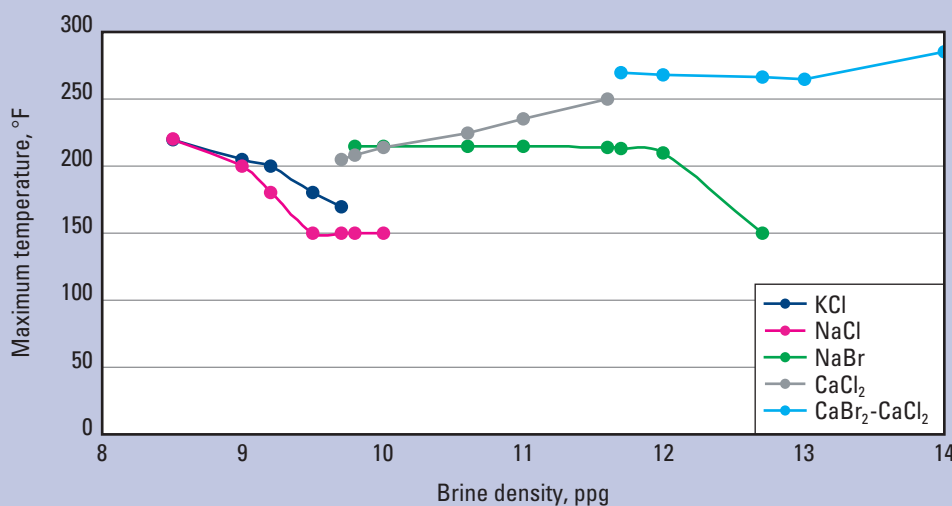
Benefits

- Maximized fracture conductivity with polymer- and solids-free fluids for reduced formation damage
- Uniform inflow and rig time savings by eliminating cleanup treatment after gravel packing
- 5–6 hr hydration preparation time saved
- Low horsepower requirements as a result of low friction pressure

Features

- Excellent gravel-suspension properties
- VES-base gravel carrier with density to 14 ppg [1.68 sg]
- Compatible with some enzyme and chelating agent solutions
- Full viscosity breakdown in contact with most crude oils
- High retained permeability characteristics

ClearPAC HD temperature and density domain with different brines.



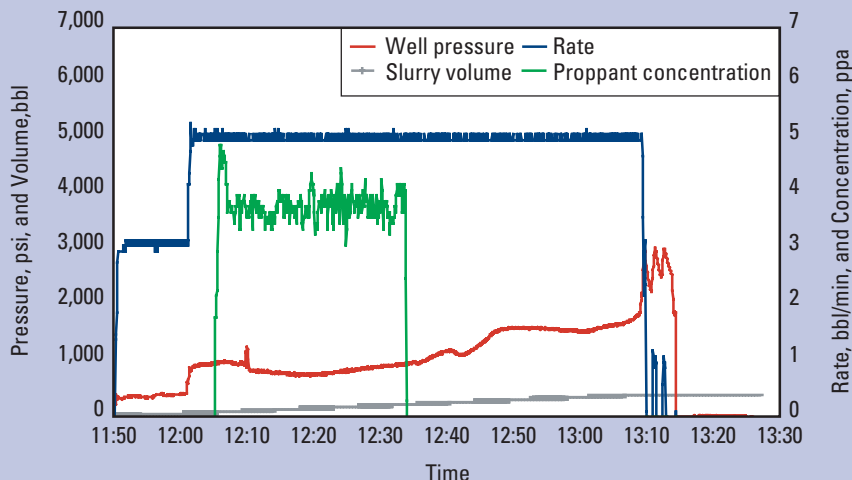
15,000 BOPD during ClearPAC HD job

A major operator in West Africa had to gravel pack a highly deviated (77°) section more than 400 ft long in circulating mode while maintaining well control. Bottomhole static temperature was 150°F [65.6°C], and oil reservoir permeability was 100 mD. The well was drilled with oil-base mud, which was displaced later in a separate run. ClearPAC HD fluid mixed with a 9.8-ppg [1.18-sg] CaCl₂ brine was the main treating fluid. Using ClearPAC HD fluid, 19,234 lbm [8,724 kg] of size 30/50 sand was pumped downhole and 16,845 lbm [7,641 kg] was effectively placed below the crossover port. The gravel concentration was a constant 4 lbm gravel added.

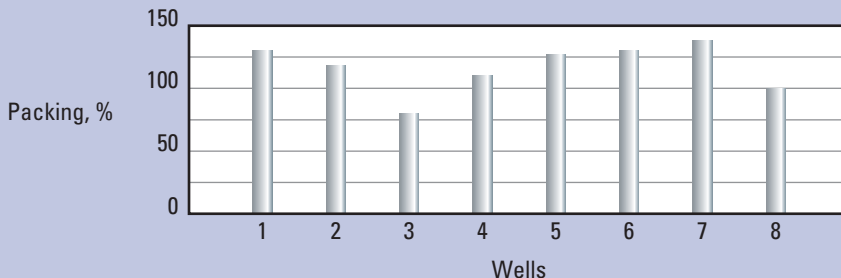
The pack was restressed twice to 3,000 psi to ensure good annular packing around the screens. No losses occurred during the gravel pack.

The sand placed between screen and open hole was 118% of the theoretical volume. The well produced 15,000 BOPD 1 week after completion with a productivity index of 60 and a skin of 3.

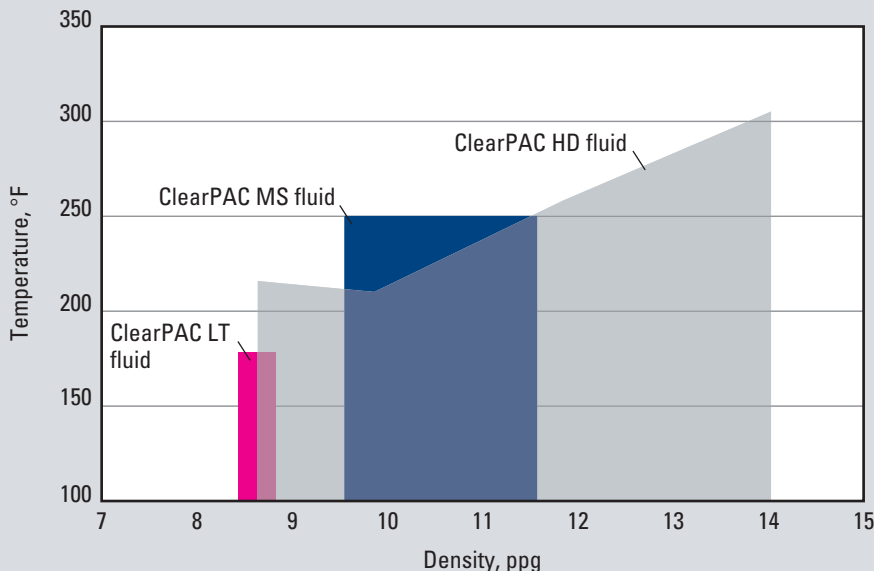
Job execution parameters during the ClearPAC HD job in West Africa.



Gravel pack pumped versus designed gravel-pack volume in eight West Africa wells for a major operator.



ClearPAC LT, ClearPAC MS, and ClearPAC HD temperature and density application domains.



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