

CemPRIME

Engineered chemistry spacer

APPLICATIONS

- Removal of nonaqueous fluids (NAF) prior to cementing operation
- Efficient with mineral, paraffinic, and olefin based NAFs
- Bottomhole circulating temperature range of 80 to 300 degF [20 to 150 degC], which can be extended based on appropriate laboratory testing

BENEFITS

- Optimizes drilling fluid removal through efficient cleaning and emulsion inversion
- Enhances cement-to-casing bond with better hole cleaning
- Reduces remedial cementing requirements

FEATURES

- Spacer chemistry tailored to the well conditions
- Package selected based on type of NAF base oil, temperature, and salt content
- Improved testing methodologies: repeatable, accurate, HT cleaning measurement
- Chemistry selected to have minimum impact on cement slurry thickening time and compressive strength development



CemPRIME spacer is customized based on specific wellbore conditions and other pertinent selection criteria.

Nonaqueous fluids are diverse and used across a broad range of downhole conditions. CemPRIME[®] engineered chemistry spacer is the robust mud removal solution suited to these widely variable conditions. The additive suite comprises D232 and D233 surfactants and D231, D234, D235, D241, and D241A solvents.

NAF base oils can be classified based on their chemistry from polar and small chain oils to apolar and long-carbon chain oils: mineral oil, olefin oil, and paraffinic oil.

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Repeatable, robust methodology

The complex behavior of spacer downhole can be simulated in the laboratory looking at each aspect:

- emulsion inversion
- spacer stability
- cleaning
- impact on cement.

The laboratory protocols and apparatus used to measure the spacer performance have been improved so that the results are repeatable and robust. The HT cleaning apparatus has the capacity to heat fluids up to 356 degF [180 degC].

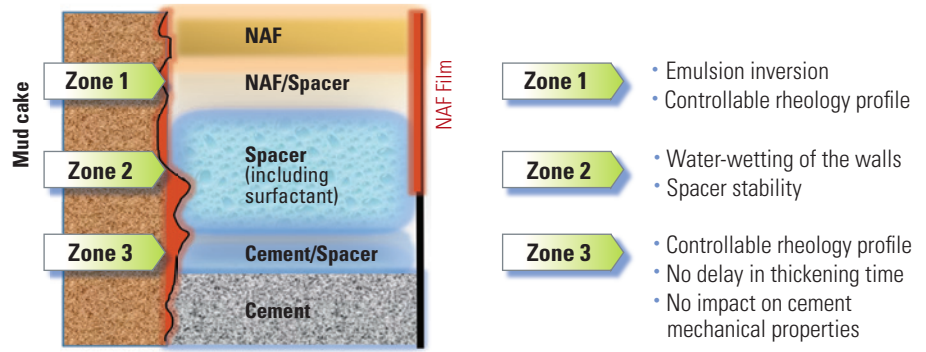
More efficient mud removal

CemPRIME spacer surfactants and solvents were designed to be effective cleaners and demulsifiers for a wide range of temperatures, base oils, and spacer salinity. CemPRIME spacer exhibits excellent compatibilities with NAFs and cement slurries, and has a minimum impact on cement slurry thickening time or compressive strength development upon contamination.

Tailored to well conditions

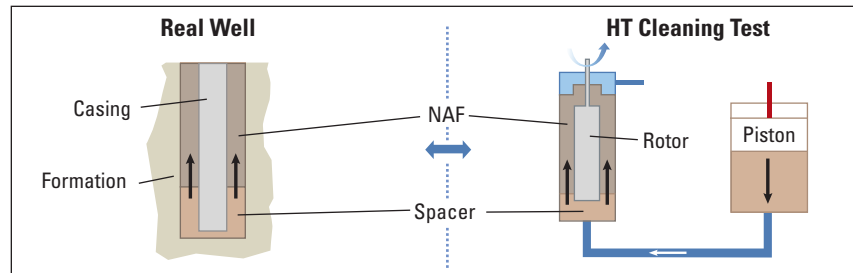
CemPRIME spacer comprises several surfactants and solvents packages that are selected based on three parameters:

- temperature
- NAF base oil
- salt concentration in the spacer.

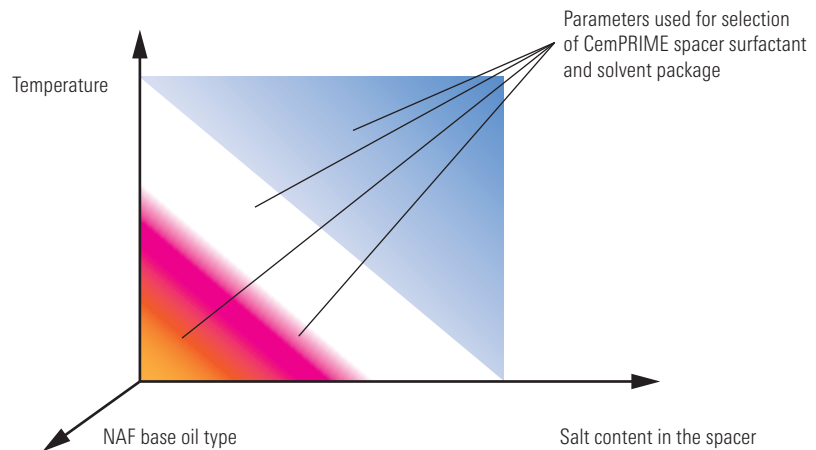


LAB TESTS PERFORMED TO SIMULATE EACH ZONE			
De-emulsification Spacer surfactant selection test (SSST)	Spacer Stability Static sedimentation compatibility spacer/NAF	Cleaning Rotor test HT cleaning test	Impact on Cement Thickening time Rheology Compressive strength
Zone 1	Zone 1, 2	Zone 2	Zone 3

Mechanisms and laboratory testing for drilling fluid removal.



Principle of the HT cleaning test compared to an actual well.



CemPRIME spacer surfactant and solvent selection criteria.

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