

PRODUCT BULLETIN

Micro Strength™



Canadian Energy
SERVICES

MICRO STRENGTH™

Loss Prevention & Wellbore Strengthening Additive

Micro Strength™ is designed to enhance drilling performance by sealing losses and strengthening the wellbore.

Micro Strength™ includes a special, sub-micron material to improve sealing and packing in microfractures, reducing fluid loss.



BENEFITS

- Seals and strengthens the wellbore, covering fractures up to ~250 microns.
- Superior compressive strength allows material to seal and support openings as it enters a fracture, effectively strengthening the wellbore.
- Sub-micron material improves sealing and packing in micro-fractures, tightening fluid loss.

APPLICATIONS

- 14.25 kg/m³ as background material in circulating system - increased concentrations can be used depending on loss scenario.
- Effective in oil / synthetic-based or water-based drilling fluid systems.
- Performs in combination with other lost circulation materials.



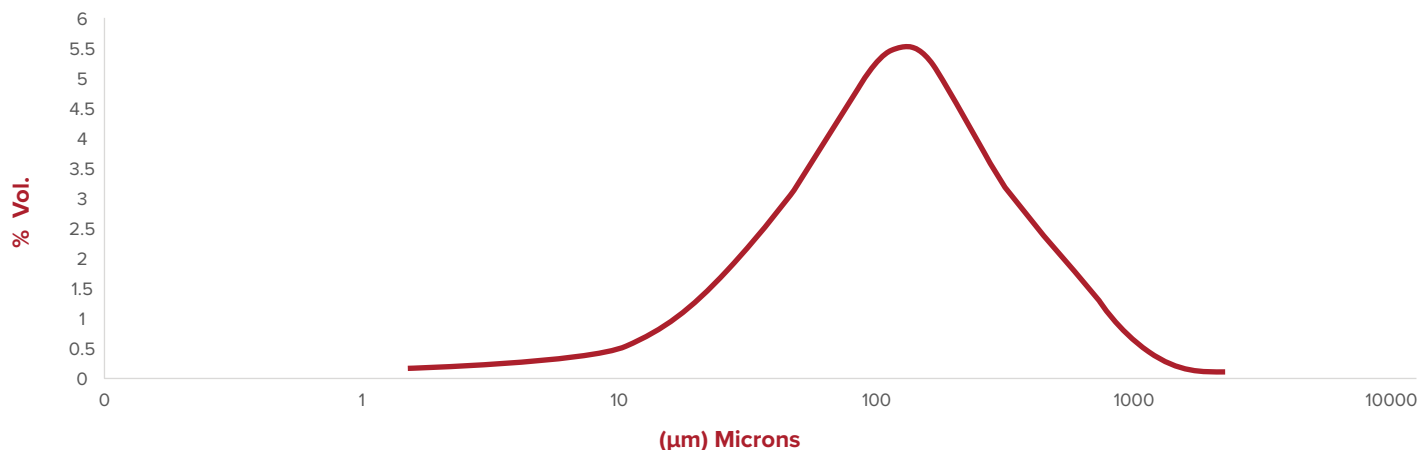
**LIMITS DRILLING
INDUCED FRACTURES**



**REDUCED
FLUID LOSS**

PARTICLE SIZE

✓ MICRO STRENGTH™



CASE STUDY

Micro Strength™

CHALLENGES

- Mechanically weak Wilcox formation risks mud losses and wellbore instability.
- Maintaining wellbore strengthening material in narrow mud weight window.

RESULTS

- No losses beyond seepage occurred while drilling the troublesome Wilcox formation.
- Sand bed test indicated Micro Strength™ vastly improved fluid loss.
- Micro Strength™ remained in the system after screening up shaker screens to 140/200 API mesh, no losses encountered throughout curve and lateral sections.

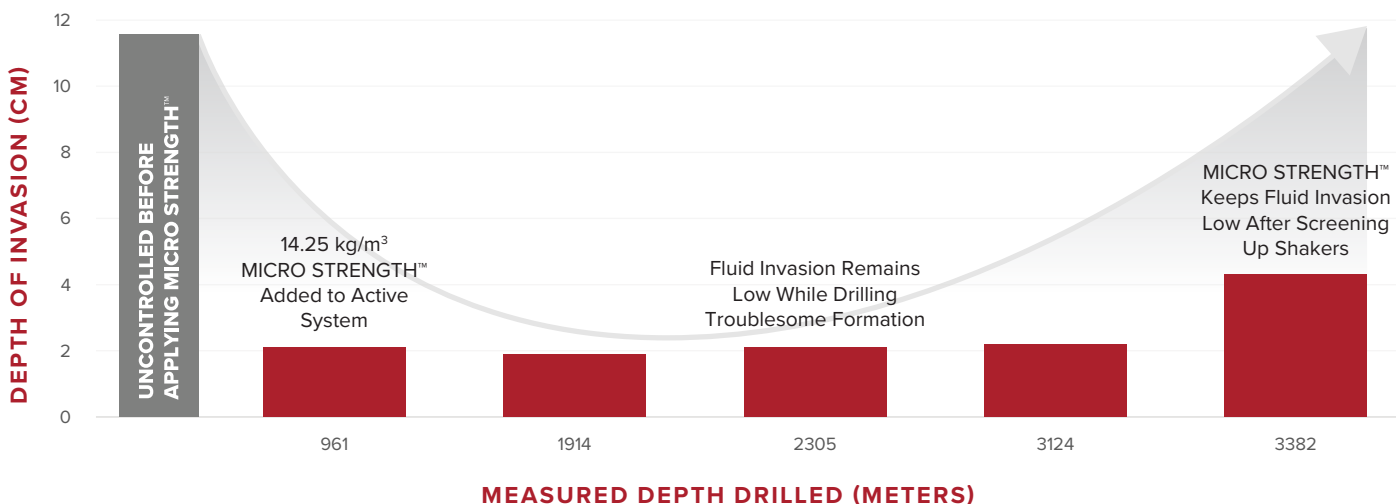
SOLUTION

- 14.25 kg/m³ of Micro Strength™ loss prevention and wellbore strengthening material.
- Sand bed test to track and maintain Micro Strength™ performance.

Basin	Eagleford
Town	Gonzales, Texas
Formation	Wilcox
Mud Type	OBM (NAF)

DETAILS

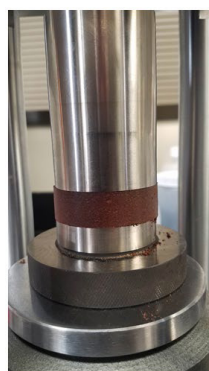
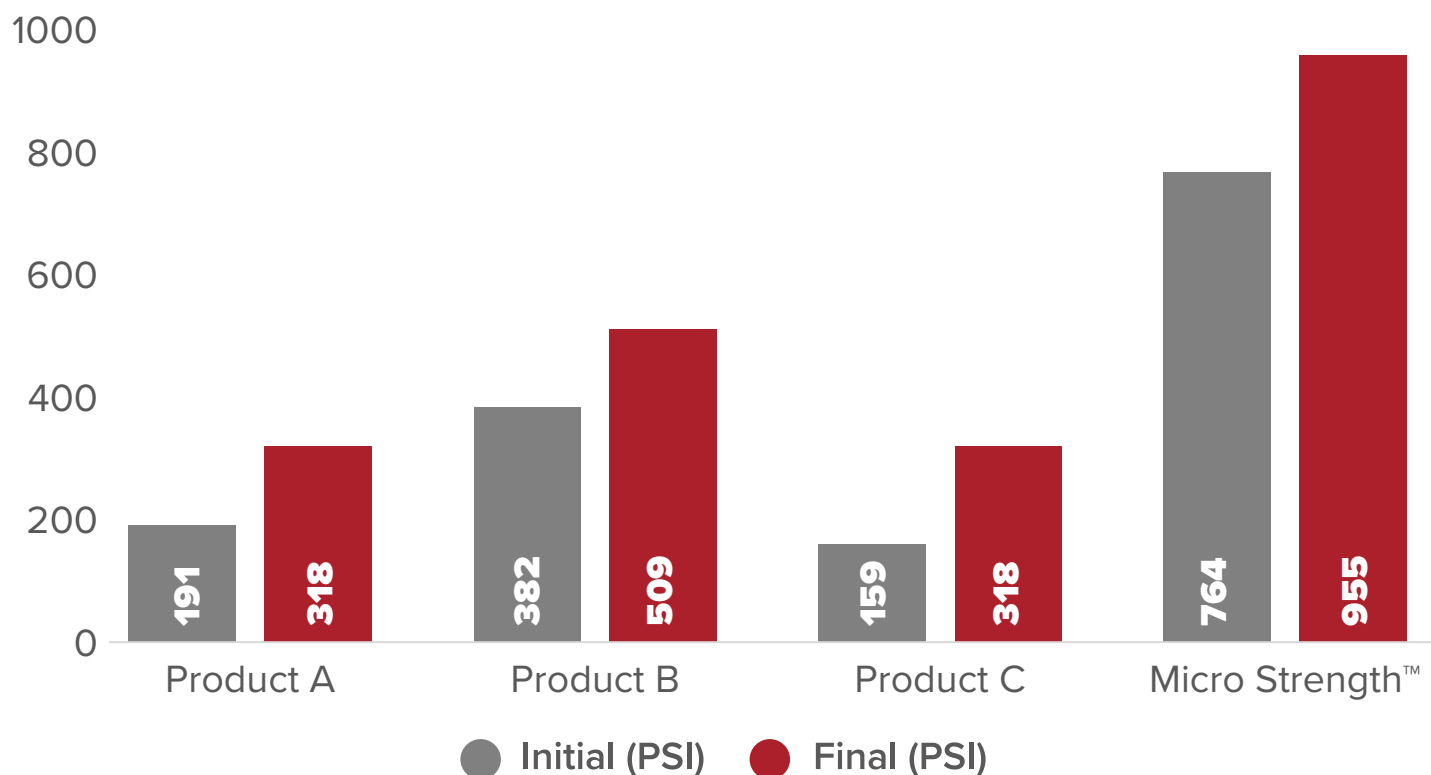
Offset well data indicated the required mud weight to be maintained near 1198 to 1220 kg/m³ to balance wellbore instability with the potential for whole mud losses. Before drilling out the section, shakers were equipped with API 45 mesh shaker screens. Sand bed testing before adding Micro Strength™ demonstrated uncontrolled fluid invasion. After treating the system with Micro Strength™, the initial sand bed test featured 2.1 cm of invasion. As drilling progressed, 2 out of 3 shakers were screened up to 140/200 API mesh screens and the centrifuge was run intermittently to maintain mud weight. The sand bed test remained below 2.5 cm as no losses were encountered, notably while drilling through the Wilcox formation. After screening up all shaker screens to 140/200 API, the sand bed test remained below required specification of <5.0 cm of invasion after drilling the lateral section, indicating Micro Strength™ still provided improved fluid loss. Operator personnel at the rig site approved of Micro Strength™, commenting on its improved performance compared to other wellbore strengthening products used on previous wells on the same pad.



COMPRESSIVE STRENGTH TESTING

Micro Strength™

UNCONFINED COMPRESSIVE STRENGTH



PRESS
(INITIAL)

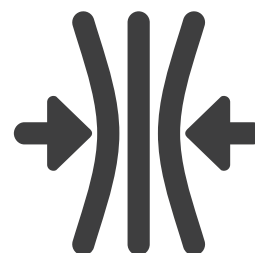


HOLDING



COLLAPSE
(FINAL)

(LCM plug compressive strength testing)



CAN INCREASE
COMPRESSIVE STRENGTH BY

>150%

OVER COMPETITIVE OFFERINGS