

TenEx Technologies, LLC, develops proprietary, materials-based technology solutions for the oil & gas industry. TenEx focuses on generating the lowest cost per barrel of oil using innovative, high-performance materials that can be tailored for every reservoir.



NANOCLEAR® FD | FORMATION DAMAGE TREATMENT

NanoClear® is a patent-pending portfolio of high performance, materials-based solutions tailored for specific treatments designed for oil well and reservoir stimulation.

Removal of formation damage materials

- Organic materials:
Paraffin, Asphaltene
- Inorganic materials:
Scale, Gel

Enhanced Oil Recovery

- Enhances oil recovery via wettability alteration and reducing residual oil saturation
- Reduces water cut

Focusing on reducing the cost per barrel, TenEx offers a comprehensive treatment package ensuring the following advantages:

- No capital investment
- Minimal treatment cost
- Simple cyclic treatment via "Huff 'n Puff"
- Environmentally-friendly materials and fluids
- Seamlessly fit into standard oilfield processes
- Tested in the lab under a physical reservoir simulator to reduce operational uncertainties
- Easily & quickly tailored for any reservoir (onshore & offshore)

Remove

Inhibit

Recover

Long-term prevention of deposition materials

- Alters wettability (oil wet to water wet)
- Improves effective permeability over baseline performance by providing a long-lasting wetting resistance to heavy hydrocarbon

The Effect of NanoClear® FD on Removing Asphaltene Damage

Core flood testing showed effectiveness of NanoClear® FD in removing formation damage and altering wettability from oil wet to water wet, both of which will improve oil recovery rates.

Pressure

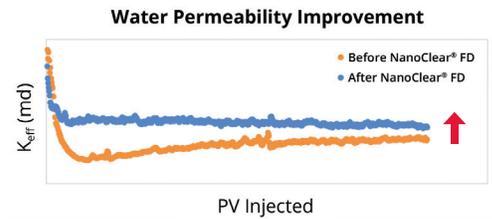
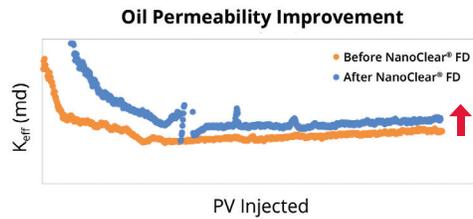
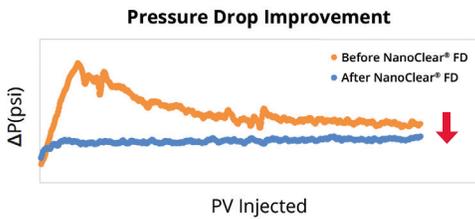
The pressure difference between core inlet and outlet before and after inducing asphaltene damage was measured. After injecting NanoClear® FD, the pressure differential showed a smoother profile with a final reduction of 18%. This demonstrates the capability of NanoClear® FD in removing the damage.

Oil Permeability

Core flood testing with oil, after damage to the core and then treatment with NanoClear®, showed effective permeability recovered by 29%. Therefore, not only did NanoClear® successfully remove the precipitated damage, but also altered the wettability.

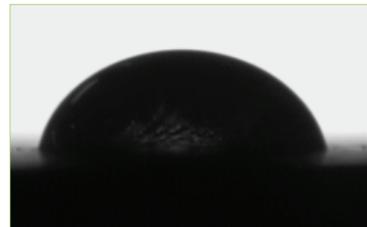
Water Permeability

Core flood testing with water demonstrated 22% improvement in water effective permeability after treatment with NanoClear® FD, meaning the residual oil saturation inside the core decreased, hence a higher oil recovery achieved after treatment.

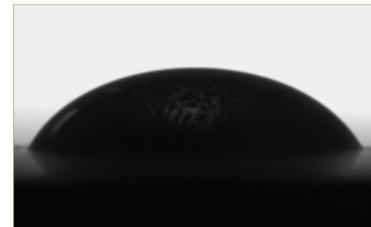


Wettability Alteration

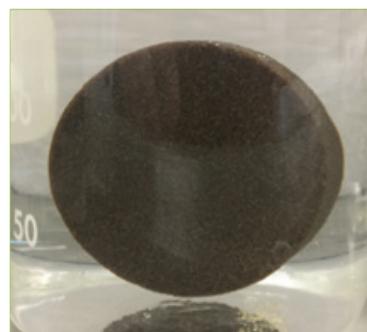
Altering the rock wettability from oil wet to water wet in damaged zone (asphaltene, paraffin, etc.) is a critical factor in optimizing oil recovery. The contact angle between water droplet and oil covered sandstone rock before core flood experiment (left) and after core flood experiment with NanoClear® FD (right) shows a 17% improvement in contact angle after NanoClear® FD treatment. Visual tests (bottom) show results before and after 24 hours of treatment with NanoClear® FD at static conditions. *These results show NanoClear® FD has superior performance removing the hydrocarbon from the rock surface and altering wettability to water wet in both static and dynamic conditions.*



Without NanoClear® FD



With NanoClear® FD



Visual static testing showing sandstone rock saturated in oil



After treatment with NanoClear® FD



The TenEx Principle. In his book, *Zero to One*, author Peter Thiel describes the rules for creating a great business; Rule 1? **Build proprietary technology that is 10x better.** In other words, shoot for game-changing innovation, not incremental steps. At TenEx, it is our mission to develop disruptive solutions for the oil and gas industry by developing high-performance, materials-based technologies that maximize productivity, lower costs, and spark imagination.

TENEX

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