

Transcend™

Permeability Enhancer

FLOW-ENHANCING TECHNOLOGY DESIGNED TO IMPROVE PERMEABILITY OF FRACTURES

OVERVIEW

After stimulation, a well's producing matrix will gradually start to diminish. An effective flow enhancer that mobilizes trapped hydrocarbons and prevents emulsions is critical to the production of oil and gas. The Transcend™ permeability enhancer portfolio offers flow-enhancing technology designed to improve the permeability of fractures for optimal fluid transmission.

Using innovative and industry-proven chemistries, Transcend expands the reservoir contact area and improves fluid flow to increase recovery factors. Transcend products help deliver deeper reservoir penetration, thus allowing you to stimulate more of the reservoir to maximize the effectiveness of the created fracture network and improve ultimate recovery.



DEEPER PENETRATION CHEMISTRY ENHANCEMENTS

In complex fracture networks, deeper penetration helps to improve fracture connectivity and fluid mobility, while mitigating high fluid friction and heterogeneity effects.

Complex fracture networks often consist of a multitude of interconnected fractures varying in size. By achieving a deeper penetration of flow-enhancing chemistry, it can effectively connect isolated or poorly connected fractures. Increased connectivity allows for better fluid communication and redistribution within the network, leading to more effective pathways, and ultimately improving production.

Additionally, variations in the fracture roughness, aperture, and porous media can hinder the fluid flow. Our solutions help reduce interfacial tension between fluids and rock surfaces, improving the wetting characteristics of the fractures. This leads to a reduction in capillary pressure and resistance to the fluid flow. By achieving a deeper penetration, we can access more area in the network, coating the surfaces and reducing the overall resistance to the flow.

FEATURES & BENEFITS

- » Increases flow through porous media that helps mobilize trapped hydrocarbons.
- » Stimulates flow in reservoir microporosity by injecting into the reservoir to alter the properties of fluids and rock.
- » Reduces interfacial tension and lowers capillary pressure by absorbing and altering fluid-fluid and fluid-rock interfaces.
- » Prevents stable emulsion formation with our exclusive non-emulsifying formula.
- » Demonstrates superior results when bundled with the RockPerm® service.
- » Compatible with stimulation fluids and other chemical additives.
- » Increases stimulated reservoir volume with a deeper penetration of flow-enhancing chemistry in complex fracture networks.

Recent application in the Permian resulted in

61% BOE Increase

Incremental production revenue exceeded

USD 1.7 M

PERFORMANCE-DRIVEN CHEMISTRY

The Transcend portfolio is designed to enhance fluid recovery, and has been developed using proprietary microemulsion technology.

Through our use of proprietary formulations, this line of permeability enhancers delivers:

- » Deeper reservoir penetration by traveling farther into the propagated fracture.
- » Emulsion prevention via performance-proven non-emulsifiers that help stabilize the separation of emulsions in oil and gas production.
- » Increased flow through porous media to improve recovery factors.
- » Reduced interfacial tension and lower capillary pressure, enabling improved recovery.
- » A tiered offering to facilitate customization delivering innovative, non-ionic formulations to help reduce interfacial tension between oil and water.
- » Compatibility with a wide array of stimulation fluids and other chemical additives.

PROVEN PERFORMANCE THROUGH ROCKPERM SERVICE

By complimenting Transcend permeability enhancers with the RockPerm® service, Halliburton technology teams can further optimize chemistries and concentrations, based on specific well parameters. The RockPerm service is a stimulation additive selection process that integrates specialized laboratory testing and chemical evaluation to identify the best additives to optimize well performance.

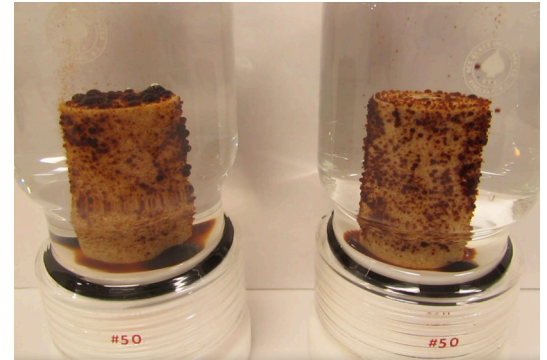
This proprietary testing methodology consists of a series of techniques, utilizing formation-specific fluids and cuttings, that include:

- » Column flow testing
- » Emulsion screening and behavior
- » Formation oil/fracturing fluid system compatibility

The RockPerm service helps determine the ideal Transcend chemistry for specific reservoir parameters. We provide customized recommendations to prevent over-treatment, which in turn effectively minimizes costs and enhances recovery factors.

In a recent case study in the Permian basin, Halliburton worked with an operator to incorporate customized chemistry into their fracture designs by utilizing Transcend permeability enhancers. The challenge presented to Halliburton was to make significant improvements to well productivity with only minor changes to the fracture design and overall operations. At the core of the solution was Transcend chemistry, optimized with the RockPerm service. The testing assessed the fluids and reservoir responses to stimulation additives. The optimized fluid system improved reservoir production with a 61 percent increase in BOE, and incremental production revenue exceeded USD 1.7 million.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com



» Figure 1. Both beakers contain oil-saturated cores. The beaker on the left contains only water. The beaker on the right contains water with Transcend permeability enhancers, which allows oil from the core to easily flow out with lower surface tension.

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