

Using Swellable Packers to Provide Annular Isolation for Multistage Fracture Treatments  
[SPE 115775 - Denver](#)

**Abstract**

For years the industry has used horizontal drilling as a method to convert marginal reservoirs into profitable reservoirs. Until recently, horizontal drilling has been reserved for conventional reservoirs and some unconventional formations such as vertically fractured shales. The challenge of extending horizontal drilling into the arena of formations with nano-darcy permeability has been difficult. These low permeability formations must be stimulated with multi-stage fracture treatments. Early attempts resulted in inefficient treatments over the complete length of the lateral. One of the most challenging aspects of multistage, horizontal fracture design treatment is ensuring proper annular isolation. This paper examines the use of swell packers as a simple, cost effective method of achieving necessary isolation.

One of the most important aspects of horizontal fracture treatment is the ability to effectively execute multistage treatments without the use of a drilling rig. For this to occur each stage must be isolated. Liners cemented in the horizontal portion of the wellbore can be effective, but the cement may cause an unacceptable level of formation damage. Uncemented liner completions have been employed, relying on diversion built into the treatment designs. Another method is to employ mechanically or hydraulically activated external casing packers to provide annular isolation. In this method, frac sleeves and balls of varying sizes are used to open and close portions of the wellbore for stimulation.

Swellable packers have recently been used successfully to provide a positive annular barrier during a multistage fracture treatment in conjunction with sliding sleeves and plug and perf operations. Using swellable packer technology has mechanically simplified the multistage fracture job. Using multiple packers ensures the entire lateral is treated. Understanding the wellbore fluids that come in contact with the swellable elastomer as well as the maximum differential pressure and temperatures encountered is critical in designing the swellable packer.

This paper discusses current and previously employed approaches to multistage fracture treatments and the proper design of swellable packers. Finally, a case history is reviewed to present a best practice approach in using swellable packers to simplify and reduce costs on horizontal multistage fracture treatments.

[Complete paper](#)