



## PRODUCT DATA SHEET

### ECONO-SI5000D

#### Solid, Delayed Release Scale Inhibitor

##### Long-term scale deposition solution

For years, the industry has looked for a program where an inhibitor, placed in the formation, provides scale deposition protection for more than a year. Economy Polymers has a scale inhibitor technology that places a robust scale inhibitor onto a solid matrix. This technology, ECONO-SI5000D prolonged scale inhibitor, has been applied in several fracture jobs in coalbed methane (CBM) wells in the Appalachian area. In some cases, the residual data shows that the scale inhibitor lasts up to five years.

##### Applications

Fracturing fluid systems

##### Benefits

Increases production

Reduces downtime due to scale in the near wellbore

Cost-efficient

Cost added to the authority for expenditure; reduced operational expense for scale inhibition

##### Features

Solid, concentrated product

Easy to add to a fracture

Robust inhibitor technology

Replaces continuous, squeeze or batch treatments

Ideal for remote locations with operational obstacles

##### Carbonate scale deposition

Traditionally, there are three common approaches to carbonate scale inhibition—continuous, batch, or squeeze applications. In virtually all cases, a liquid inhibitor is applied to the well, or to the near-wellbore in the case of a squeeze. The application concentrations vary depending on the expected longevity.

Continuous treatments require a dilution that readily mixes and diffuses into the produced or injected fluid. This provides a continuous dosage rate in the production, which requires a pump and chemical tank placed on location.



1% by weight Econo-SI5000D  
with 20/40 Mesh Proppant



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Batch treatment, practiced in some areas, is not recommended when treating for scale. When used, it eliminates the need for equipment and inventory at each well that requires treatment. A treater truck makes regular and frequent stops at each well to apply and flush a concentrated inhibitor. Applications are typically spaced 7 to 14 days apart.

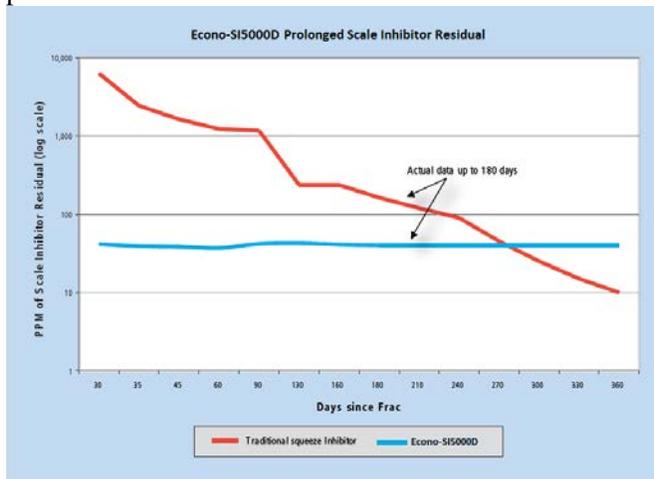
Squeeze applications are calculated on the water production and the desired life of the squeeze. The product is applied and squeezed into the near wellbore, typically calculated for 5 to 6 ft (1.5 to 1.8 m) into the formation. The chemical then enters the production as the well produces water. Because the product is liquid, its concentration varies over time. Initially, there is a higher than required dose of inhibitor, but over time, the product is depleted and the well requires a resqueeze. A squeeze can last for 6 to 12 months.

In all of these cases, the level of scale inhibitor is measured by looking at the residual of inhibitor in the produced water. If scale inhibitor residual appears 2 to 3 ppm or greater, then the program is considered to be successful.

ECONO-SI5000D prolonged scale inhibitor is specifically formulated for compatibility with the full array of fracturing fluids. Fluid compatibility is critical from an operational standpoint, ensuring that the essential nature of the scale inhibitor is not compromised by the addition of the fracturing products.

### Case History

An Appalachian-area operator produced gas from a CBM formation. The produced water had a positive scaling index and deposited carbonate scale on the perforations and on the production string. Continuous scale treatment was operationally out of the question. A scale squeeze only offered protection for up to a year. The operator wanted multiyear protection from a scale inhibitor that could be added in the fracturing process.



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The solution: a robust scale inhibitor was fixed onto an inert solid matrix. This solid product, ECONO-SI5000D prolonged scale inhibitor, was found to be compatible with a host of fracturing fluids. This inhibitor protects against general oilfield scales such as carbonates and sulfates. The product was applied and compared in the field with a traditional squeeze application. Whereas the scale inhibitor used in the squeeze was a liquid, ECONO-SI5000D inhibitor is a solid product. The results showed the difference in the applications. The squeeze product produced a high residual rate before tapering off. The fracture-applied inhibitor showed a low initial residual and held that residual over time. The treatments are now more than 5 years old. The extrapolation indicates that the ECONO-SI5000D inhibitor showed residuals long after the liquid product fell below the desired treating level.

The operator applied the ECONO-SI5000D inhibitor in the fracture and eliminated the need for continuous or batch treatment. Furthermore, the residual trend indicates that ECONO-SI5000D prolonged scale inhibitor has a life exceeding 5 years. Production has been optimized because for this operator scale no longer deposits downhole to restrict flow in the perforations. The operator has realized reduced downtime and cost due to workovers.

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