

# StrataShale<sup>SM</sup> workflow

Analyzing reservoir characteristics to help clients optimize their shale completions

## FEATURES

- Provides a roadmap to identify shale properties and initiate completion plans
- Enables the completion engineer to focus on critical steps that improve completion efficiency and reduce costs
- Offers methods that can be tendered for lower costs from service providers
- Establishes benchmarks for shale types that are price-sensitive

By understanding the physical properties of a shale play, StrataGen® Engineering can design treatments that capitalize on these properties to optimize your production.

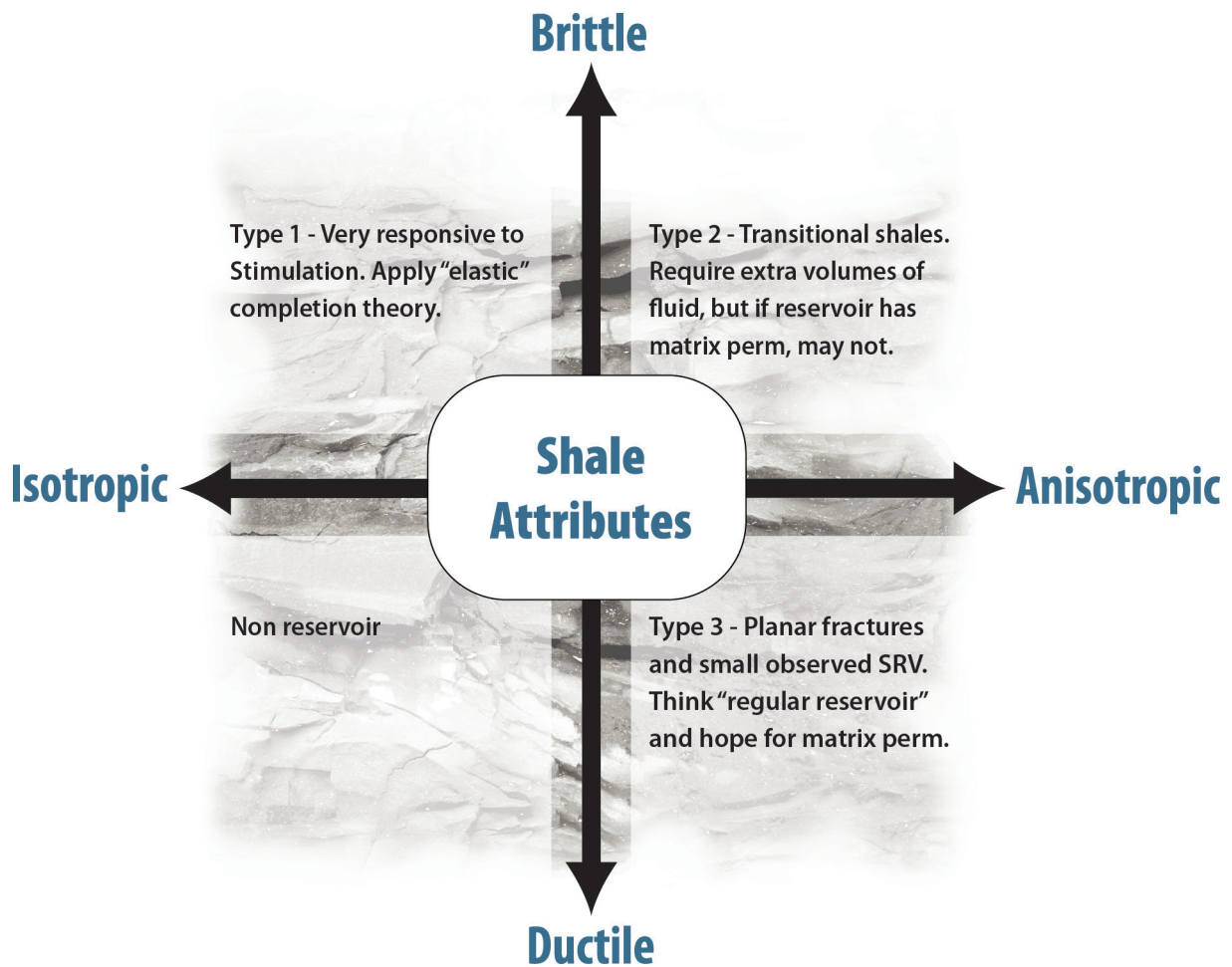
Many in the industry erroneously believe shale reservoirs are fairly simple and straightforward to complete. After assisting in the implementation of several paradigm-shifting developments in the Barnett, Bakken and Haynesville shales, we know this is not true.

All shale reservoirs are not alike. By focusing on reservoir rock characteristics, our StrataShale<sup>SM</sup> workflow enables our engineers to help clients optimize specific shale completions from start to finish.

Rock data are gathered to help identify brittleness and ductility properties as well as degrees of anisotropy. Then the shales are categorized to match a basic completion theme.

**Type 1 Shales.** These shale formations respond well to fluid injection. As a result, operators can optimize stimulation by pumping more water into the reservoir and potentially reducing the volume of proppants while achieving the same production benefits. Creating fracture complexity is vitally important.





**Type 2 Shales.** Because of the critical ratio of free water to proppant-laden fluids, Type 2 shales require specialized expertise in proppant design and placement. This means the operator must spend significantly more money and time to analyze these shales as well as devote more budget to proppant than with Type 1 shales. Hybrid frac designs are essential to successfully completing shales of this type.

**Type 3 Shales.** Optimizing production in Type 3 shales depends on generating high-quality fracture networks during pad injection. Typically, a high level of matrix permeability is required for these shales to respond. However, proppant placement must be considered in designing stimulation treatments because of pressure-dependent leakoff. Normal matrix-type stimulation treatments are highly successful in these shales.

By using our StrataShale workflow to recognize these key mechanical properties, StrataGen clients can lower their costs and improve production from the start to finish of their shale asset development.

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