

FUSION

Proppant pack consolidation technology



Increase your production and recovery with improved proppant pack integrity

With FUSION® proppant pack consolidation technology you can now create a bonded, high integrity proppant pack with or without closure stress.

The technology improves well productivity by forming a stable, high-permeability proppant pack that prevents proppant washout from the non-compressive annulus and near-wellbore areas.

Maximize injection, production and recovery rates

Current frac and pack technologies are prone to integrity and stability issues that negatively impact production and recovery. FUSION technology provides you with the well integrity critical to inject and produce at the ultra-high rates required to improve well economics and increase EUR.

Ideal for critical applications on high rate production and injection wells, incorporating frac and pack technology for sand control.

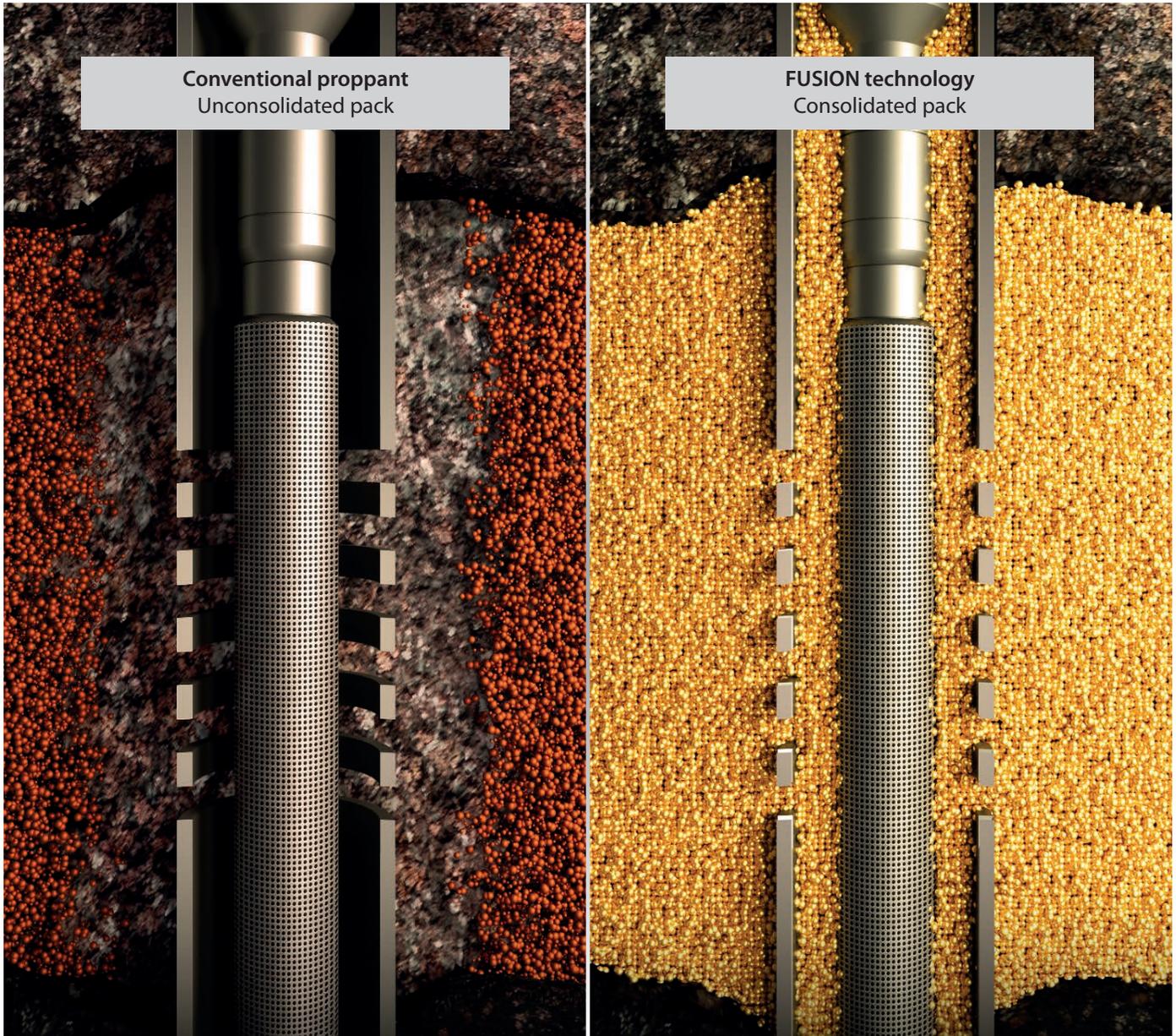
CARBO

Production. Enhanced.

Avoid proppant pack washout, voids and loss of wells

The lack of closure stress within the annulus means that the compressive forces required to bond conventional resin-coated proppant or hold the pack in place are not present.

The result is a proppant pack with low integrity and poor stability that is prone to proppant washout which can lead to voids, channels and in worst case scenarios the complete loss of the injector well.



Inject and produce at the rates you want

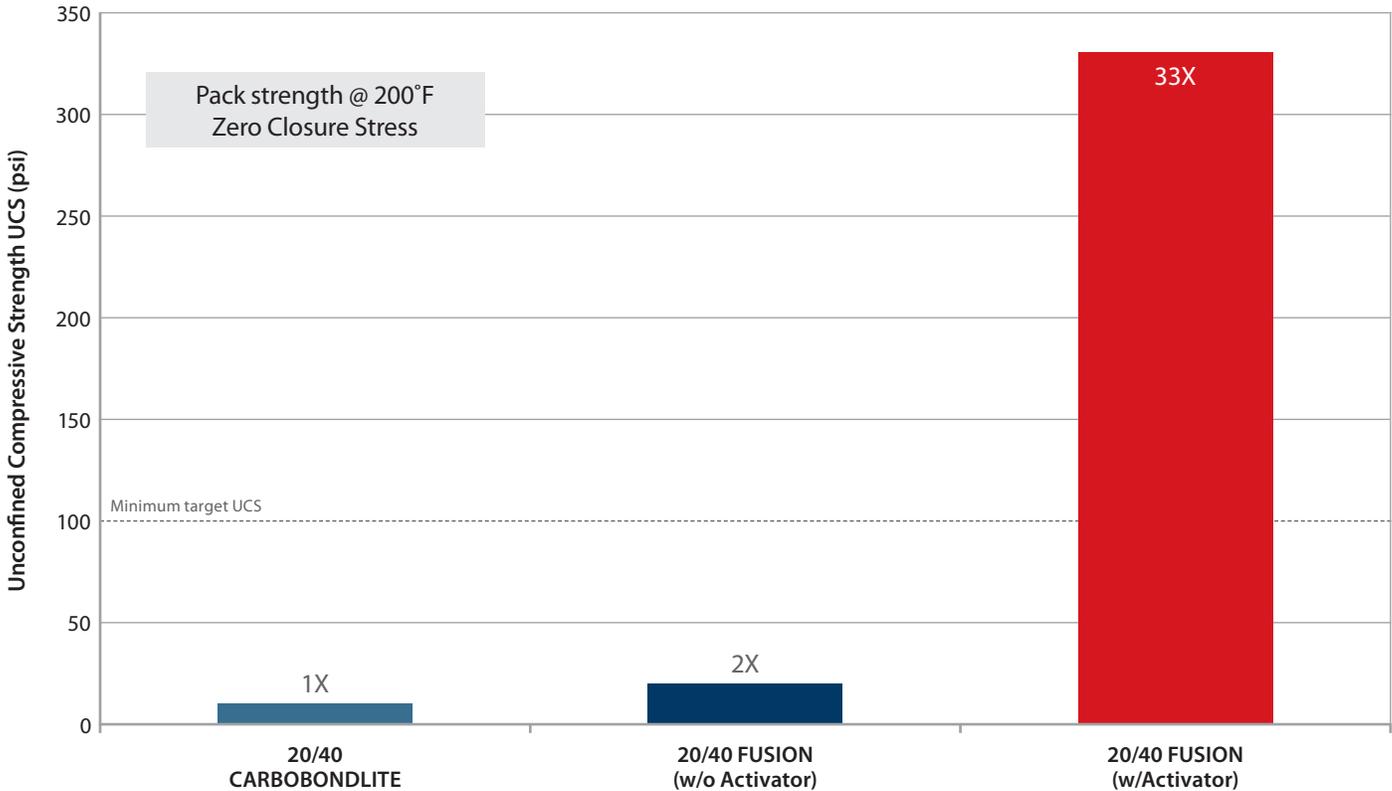
With FUSION technology, E&P operators are no longer required to limit water injection rates to protect the integrity of the annular pack and safeguard the well. This removes previous unnecessary limitation which reduced production and injection rates and the estimated ultimate recovery (EUR) from the reservoir.

Create a high integrity annular pack in low compressive environments

FUSION technology features durable, high conductivity ceramic proppant with a proprietary resin coating which enables controlled bonding of the proppant pack using a unique chemical-activator.

The chemical-activated bonding process forms a strong, flexible bond without compression even in low temperature environments to create a high integrity pack that withstands stress cycling to sustain long-term pack integrity.

FUSION proppant and activator



As FUSION technology also bonds with closure stress, it safeguards the integrity of the fracture and allows for a single resin-coated proppant to be used in a continuous frac and pack operation.

Evaluate pack integrity and propped fracture height for the life of the well

For additional reassurance, FUSION technology allows you to evaluate the placement and integrity of the proppant pack at any time during the life of the well.

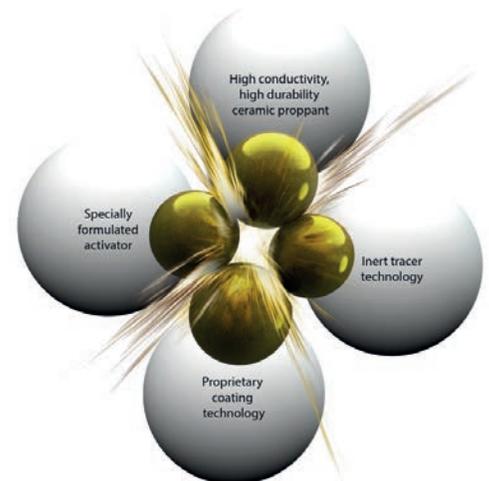
Permanently detectable CARBONRT® inert tracer technology is manufactured into the substrate of every proppant grain. This enables proppant within or near the wellbore to be detected to evaluate pack placement and quality utilizing our proprietary evaluation process.

The process can also be used to provide a direct measurement near-wellbore propped fracture height, width and connectivity.

A combination of innovative CARBO technologies

FUSION technology has been created by bringing together a unique combination of innovative and proven CARBO technologies:

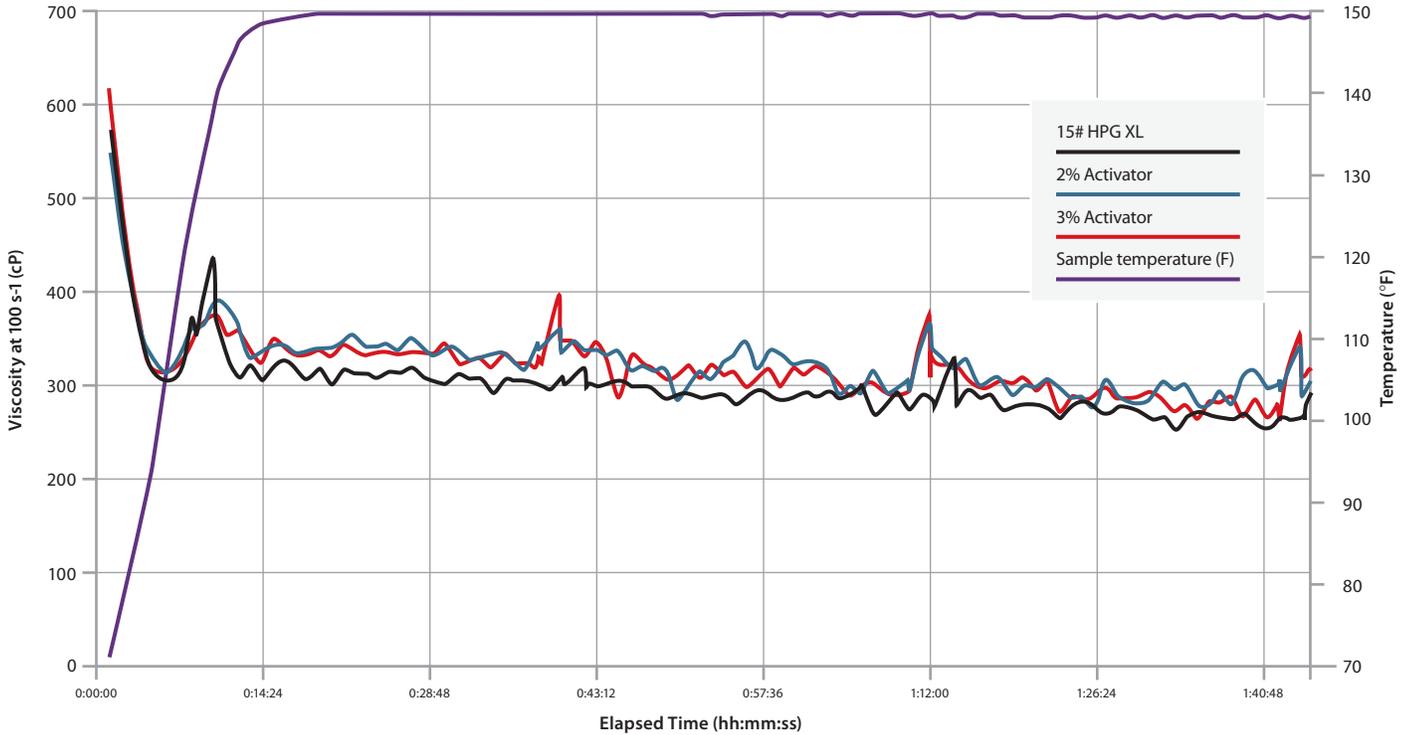
- Durable, high conductivity ceramic proppant
- Chemical bonding activator
- Proprietary coating technology
- Inert tracer technology



Simplifies operation and clean-up

As the unique bonding process is chemically-activated, any excess proppant in the workstring after the pumping of the frac and pack treatment can be reversed out prior to the bonding of the proppant pack. The technology is compatible with most frac fluids to further simplify operations. The prop and activator are run in the frac fluid as a single system.

Frac fluid compatibility



FUSION activator (2-3%, v/v) rheology profile of a 15# XL HPG fluid at 150 (°F).

Full technical and service support

Our Production Services team provides job design support and integrity evaluation for wells using FUSION technology. Our team ensures that each project is based on a detailed understanding of your reservoir, production, injection and economic objectives to safeguard the success of each project.

Talk to CARBO to find out how we can help you enhance your production.

carboceramics.com/fusion



Production. Enhanced.