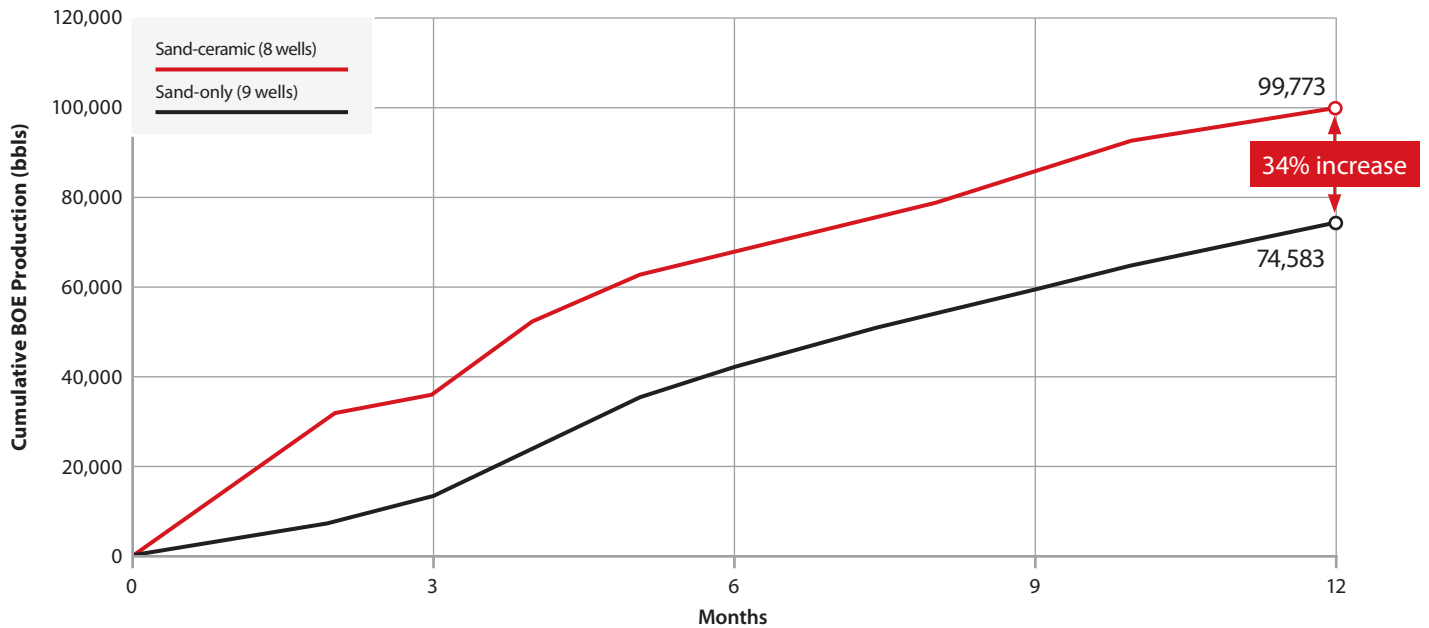


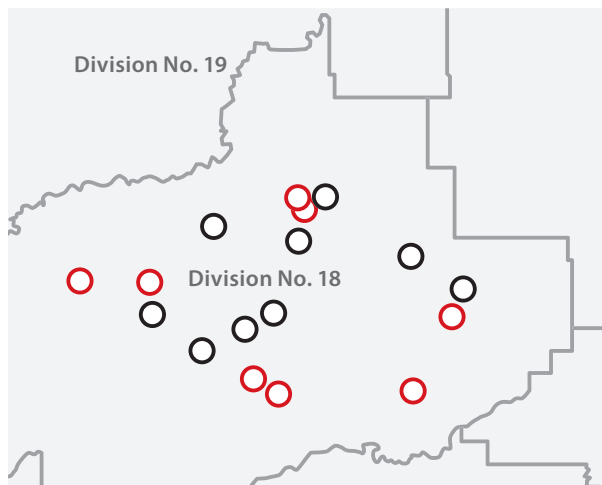
# Montney formation wells completed with ceramic proppant achieve 34% higher production than sand-only completed wells

Combined sand-ceramic completed wells shown to increase production rates, cash flow and accelerate ROI.

Montney formation production sand vs sand and ceramic proppant wells



Avg parameters	TVD (ft)	Number of frac stages	Lateral length (ft)	Proppant mass (lb)
White sand	7,376	22	7,570	2,317,391
Sand-ceramic	8,292	28	7,110	2,844,094



A study of the first year production rates from 17 wells (with comparable total vertical depths, stages, lateral lengths and pumped proppant mass) has shown that wells with a combined sand-ceramic completion significantly outperform sand-only completed wells.

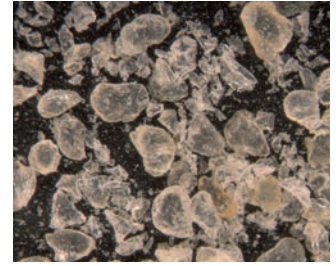
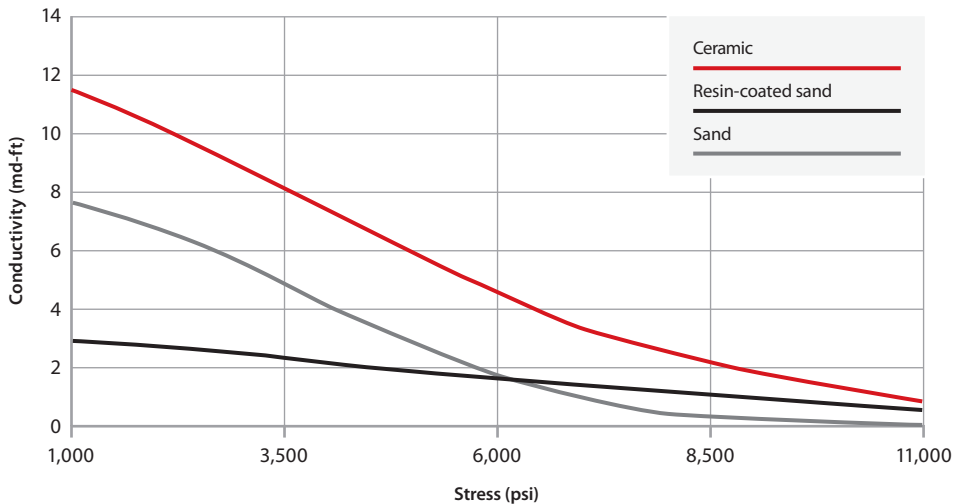
The typical vertical depth of wells in the Montney play lead to formation closure stresses outside the effective range of sand or low quality ceramic proppant. The result is reduced fracture conductivity, lower effective propped fracture lengths and lower well productivity.

## Why sand completed wells produce less

The reservoir stress environment in the Montney shale play requires a high quality ceramic proppant that will withstand stress cycling and retain conductivity to ensure that optimum production and estimated ultimate recovery (EUR) is achieved.

The reservoir stress and stress cycling in the Montney play can cause sand to crush and generate fines—dramatically decreasing short- and long-term conductivity in realistic downhole conditions. Studies have shown that sand completed wells are typically 50-60% less conductive than modeled.

### Comparison of proppant conductivity



Sand lacks the compressive strength to withstand the reservoir closure stresses experienced in the Montney play which results in reduced fracture conductivity.

## The importance of ceramic proppant selection

The choice of ceramic proppant is an important decision for operators as the quality and performance of ceramic proppant varies greatly from supplier to supplier, especially in realistic downhole conditions. Studies have shown that low-quality ceramic proppant has a negative impact on production and EUR when compared to high quality, high-performance ceramic proppant.

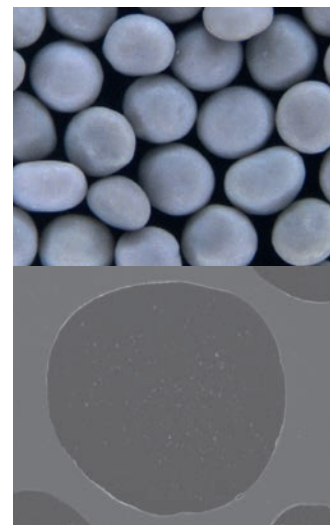
## The advantages of high performance, low-density ceramic proppant

High quality, low-density ceramic (LDC) proppant are particularly well suited to the reservoir conditions in the Montney play as they enable operators to economically achieve the optimal balance of contact and conductivity for the reservoir.

CARBO has a range of LDC proppant that provides the strength, durability and conductivity required to achieve optimal production rates. The improved transport characteristics of these high quality LDC proppant results in more effective propped fracture lengths, creating more space for hydrocarbon flow.

### For more information on how to enhance your production in the Montney shale play contact:

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KRYPTOSPHERE LD ultra-conductive, low-density ceramic proppant has an exceptionally low and uniformly distributed internal porosity which creates a low-density proppant with extraordinary compressive strength and durability.

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

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