

Performance Comparison: Ceramic Proppants vs Frac Sands

Using ceramic proppants minimizes the loss of fracture conductivity over the well life. This article shows one of the reasons why. Take a glance!

Previous studies showed that only 5% fines can decrease the proppant pack conductivity by 62%. These studies also concluded that during the well life, one of the reasons for the productivity reduction of oil and gas is the amount and size of the fines generated by the proppant failure. Only 5% fines can cause a 62% reduction in proppant pack conductivity. Studies conclude that particles smaller than 150 µm (< 100 mesh) for a #20/40 proppant pack move to a certain extent and block part of the pack porosity reducing the proppant pack permeability, substantially.

Comparing ceramic proppants against natural frac sands, the superior performance of the manmade proppants is remarkable. Figure 1 illustrates the amount of fines generated after the crush test at 10,000 psi for a frac sand (A) and a ceramic proppant (B). It is possible to identify some broken particles in both samples, but the presence of shattered grains is much more evident for the frac sand (A).

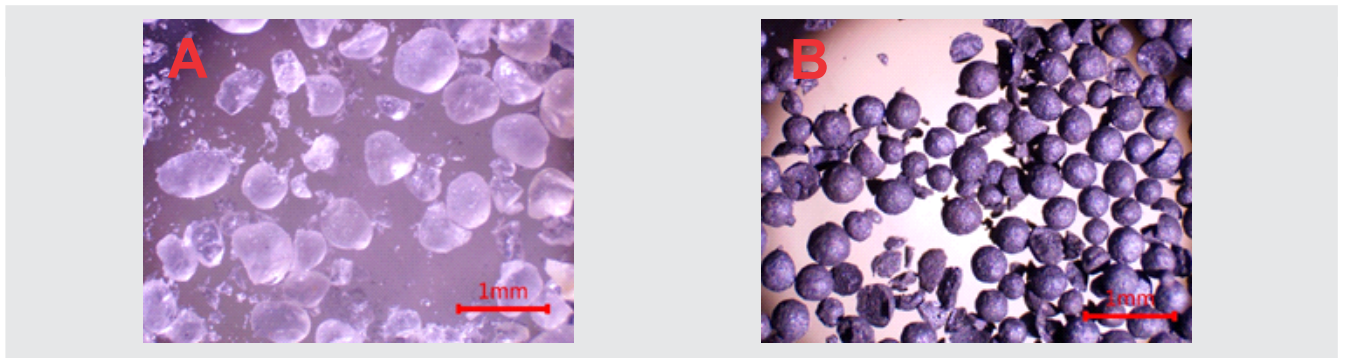


Figure 1 - # 20/40 samples of a frac sand (A) and ceramic proppant (B), crushed at 10,000 psi.

The difference in the performance of these two proppant types can be quantified comparing the amount of fines generated by the closure stress increase. Figure 2 shows that from 4,000 psi on, these materials are easily distinguished.

Therefore the selection of a low fines generation material such as ceramic proppants is highly recommended in order to avoid the clogging, permeability reduction and consequently, productivity losses.

Mineração Curimbaba is one of the most traditional ceramic proppant manufacturers, with thousands of tonnes of proppants produced, delivered and used worldwide in the last 3 decades. Under the brand names SinterMax (UHSP), SinterBall (HSP) and SinterLite (ISP), Mineração Curimbaba offers a wide range of products for different closure stresses, granting service companies and operators high and long term productivity of the wells.

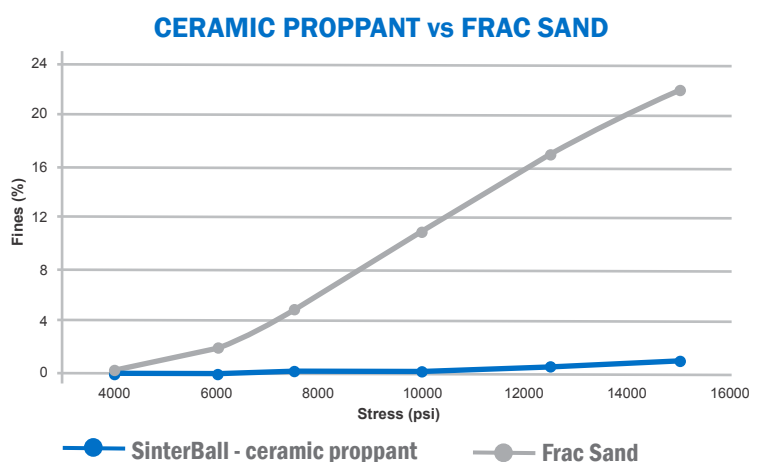


Figure 2 - Finer than 100 mesh material generation for #20/40 samples in different crush conditions.