FloPetrol

WELL BARRIER

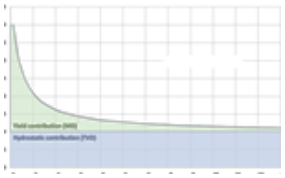
QuartzPack™ for SandBlock™

www.flopetrol-wb.com

QuartzPack™ for SandBlock™

Lost Circulation Material (LCM)

The pressure required to move a Bingham Plastic must exceed the product YP*A, where YP= Yield Point and A= Area. When a volume of the material is squeezed into a fracture, the area (between the fracture surface and the QuartzPack material) increases very fast. When the squeeze pressure becomes balanced by the increasing YP*A, further movement into the fracture stops and the material transforms to solid. The subsequent circulation in the well bore only removes excess material at the mouth of the fracture, but the fracture is left permanently sealed.

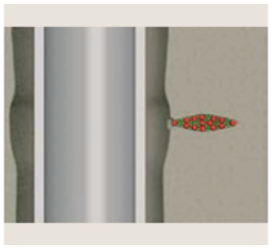


YP vs Area; As the fracture width decreases, the YP increases exponentially.

A lost circulation situation can be effectively and permanently resolved by using QuartzPack both if the losses occur in permeable zones or through fractures without matrix permeability. No liquid leak-off from QuartzPack is required.

The material will not filter through itself nor into the formation, due to the low permeability and the large particles that cannot move through the lattice. The entire volume is like a screen-out from common types of particle/liquid materials.

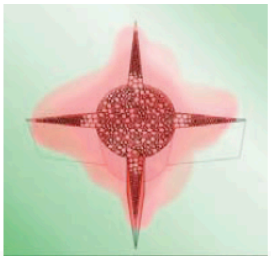
The pressure at the fracture tip falls below the fracture propagation pressure and the fracture growth stops. When the pressure applied to propagate/bullhead QuartzPack material into fractures is subsequently bled off, the formation closes and traps the material inside the fracture where it acts as a permanent seal.



The fracture mouth closes when the applied hydrostatic pressure is released

QuartzPack cannot flow into the pores around the fracture. The way to get more material into a fracture that does not propagate radially from the well is by widening the aperture of the fracture. This creates additional counteracting, circumferentially acting stress from the formation and increased restriction against new fracture opening, also called hoop stress.

The hoop stress around the well bore will act as a reinforcement element of the near-well rock volume; therefore improved well bore stability. This phenomenon has been observed in building of arches.



The pink area is stressed, which improves hole stabilization and increases the drilling window.

Because of the ideal distribution and presence of all grain sizes, from 2.5 mm to less than 0.05 microns, the permeability of the QuartzPack material is much lower than 0.1 mD.