Critical Proppant Selection Factors

Are you selecting proppant based on unrealistic lab testing?

Conductivity

Critical Proppant Selection Factors

- Proppant Crushing and Fines
- Cyclic Stress
- Embedment
- Effective Conductivity

What happens to proppant beneath the surface.

CRCS: A general term for Curable Resin Coated Sand.

Not all CRCS is created equal. Spec Hexion.

Production Facilities



Hexion also offers unique production chemicals and H_oS scavengers. Are you up to date on the latest production technologies?

Effective Conductivity

The low flow rates of baseline (or reference) conductivity tests do not simulate downhole flow rates. High flow rates can cause proppant fines to migrate, decreasing fracture conductivity. Effective conductivity is a more accurate measurement of downhole proppant performance.



5% fines leads to 60% reduction of fracture —

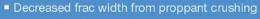
flow capacity (Coulter & Wells, SPE 3298, 1972)



Cyclic Stress

Pressure and stress changes over the life of the well, like shut-ins, can cause some proppants to fail leading to:







Embedment

into the formation face leading to:

- Decreased frac width from embedded proppant
- Generation of formation fines



Proppant Flowback

Well production can carry proppant out of the fracture, causing many detrimental effects:

- Frac width reduction
- Wellbore deposition
- Pump and surface equipment damage





CRCS reduces fines by minimizing point loading and encapsulating any fines that may be generated.



CRCS minimizes changes by forming a bonded, flexible lattice network that reduces the detrimental effect of stress cycling.



CRCS creates a unified proppant pack with more surface area to contact the overlying stress, lowering the overall depth of embedment.



CRCS bonds together under temperature and closure stress to control proppant flowback.

Wet, Hot Crush Test and Cyclic Stress Test

Hexion introduced the Wet, Hot Crush Test in SPE 135502 in order to stimulate downhole conditions.

- Temperature and fluid increase fines generation, even in bauxite
- CRCS is stable in wet, hot conditions and minimizes fines
- Adding cycled stress can further test the performance of proppants and resiliency of CRCS



Proppants

requiring wellbore



