PureChem® Services
Completion Fluids

PropCure™ XC/XB

Technical Bulletin

PropCure is an on-the-fly curable resin coating that allows operators to coat sand for hydraulic fracturing on location. The unique chemistry has an affinity for proppants, so it coats the proppant and not the equipment.

Once downhole, the PropCure-coated proppant acts like traditional curable resin-coated proppant providing all the same benefits of grain-to-grain bonding and keeps proppant in the fractures where it's intended to stay.

Additionally, the PropCure coating acts as a production enhancer by modifying the surface of the proppant. This results in higher hydrocarbon flow rates through the proppant pack compared to traditional proppants.

Technical Advantages and Benefits

PropCure coating provides savings by:

- Mitigating proppant flowback
- Reducing time flowback services are needed on-site
- Extending life of artificial lift systems and other equipment

PropCure coating improves production and revenue by:

- Keeping proppant in the fractures and maintaining pathways for oil and gas to flow
- Improving conductivity of the proppant pack compared to uncoated frac sand
- Encapsulating proppant fines, which can otherwise move and plug off the permeability of the proppant pack
- Altering the relative permeability of the proppant pack

Technical Applications

Fracture Treatments:

- At bottomhole static temperatures ranging from 32°C – 204°C (90°F – 400°F)
- PropCure coating XC and XB components are combined at the wellsite in a static mixer that feeds directly into the blender tub

Unconfined Compressive Strength Testing

PropCure coating provides significant bond strength to control proppant flowback. The coating is effective at a wide range of bottom-hole temperatures.

- Testing completed at 1,000 psi (6.9 Mpa) with a one-inch diameter cell.

Proppant Type	Dosage % BWOS	Temperature °C (°F)	Shut-in Time (Hours)	UCS Mpa (psi)
NWS 20/40	1.0	50 (122)	24	0.43 (62)
NWS 20/40	1.0	100 (212)	24	1.69 (245)
NWS 30/50	1.0	50 (122)	24	0.61 (89)
NWS 30/50	1.0	100 (212)	24	2.28 (323)
NWS 40/70	1.0	65.5 (150)	8	0.51 (74)
NWS 40/70	1.0	65.5 (150)	24	1.93 (280)
NWS 40/70	1.0	65.5 (150)	48	2.93 (425)
NWS 40/70	1.0	65.5 (150)	72	3.74 (542)

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Conductivity

PropCure coating has improved conductivity and permeability compared to the control of uncoated frac sand. This improvement can be attributed to fines encapsulation and reduced fines migration.

Closure Pressure (psi)	2,000	4,000	6,000	8,000	10,000
PropCure XC/XB 20/40 NWS	5,006	3,095	1,220	456	241
PropCure XC/XB 30/50 NWS	2,307	1,670	809	301	153
PropCure XC/XB 40/70 NWS	1,252	929	456	201	101
PropCure XC/XB 40/70 Regional	868	387	145	52	24
40/70 NWS Uncoated	1,W490	872	310	115	50

Note: 40/70 mesh Northern White frac sand provided by an operator.

Viscosity Temperature Chart

Temp °C °F	0 32	10 50	20 68	30 86	40 104	50 122
PropCure Additive			Vicosity (cP)			
XC	2,406	894	433	229	128	77
XB	2,335	588	286	121	92	29

Critical Flow Rate

PropCure coating improves the proppant pack's ability to withstand producing flow rates at much higher rates compared to uncosted frac sand and resin-coated proppants.

- PropCure XC/XB-coated sand pack did not fail at the maximum flow rate
- The critical flow rate of PropCure XC/XB coated sand pack is 1,300 times higher than that of uncoated frac sand

Physical Properties	PropCure XC	PropCure XB
Physical Form	Liquid	Liquid
Color	Brown	Colorless
Odor	Slight	Slight
pH	10.02	8.50
Viscosity 20˚C (68˚F, 100 RPM)	250-450 cP	200-350 cP
Pour Point	-31˚C (-24˚F)	-25˚C (-13˚F)
Flash Point	87˚C (189˚F)	140˚C (284˚F)
Density lb/gal	8.2937	9.3510
Specific Gravity	0.9938	1.1205
Suitable Mesh Sizes	12/20, 16/30, 20/40, 30/50, 40/70, 100 Mesh	
Storage Conditions	Cool and Dry	
Shelf Life	1 year	
Packaging	Tote or bulk (tank truck or rail car)	