STEP-XB Delayed Borate

The STEP-XB delayed borate crosslinked system provides the ability to pump a high viscosity fluid while minimizing friction pressures. The system's properties can be optimized to achieve the desired viscosity and proppant suspension for the fracture design while minimizing formation damage (low polymer content and optimized breaker loadings). The time-delay on the crosslink can be varied to have the desired viscosity prior to entering the formation, in addition to reducing friction pressures of the treatment. The crosslink is shear stable and will maintain its viscose properties during high shear events. The system is compatible with a wide range of temperatures from 20°C to greater than 120°C. Multiple delayed crosslink additives are available to cover specific temperatures.

Properties:

- High pH delayed crosslinked system
- Ideal for a large range of temperatures
- Crosslink time and final viscosity are optimizable
- Lower surface treating pressures with the delayed crosslink
- Can be pumped with slurried or powder guar
- Temperature ranges can be increased above 120°C with the addition of stabilizers
- N_2 can be used to energize the system
- Low residue system

Physical Data:

Properties	
Appearance	Yellow liquid
Odor	Slight
pH	8.5 -9.5
Vortex Closure	1-3 min
Crosslink Time	1.5-4 min

Technical Data:

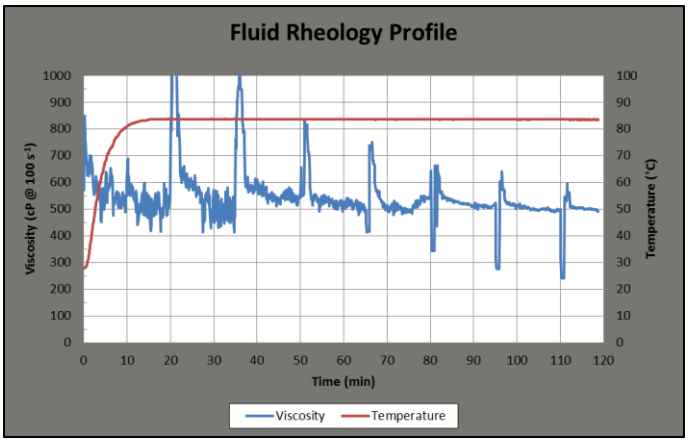

Figure 1: Gel stability testing of a 3.0kg gel at 85°C

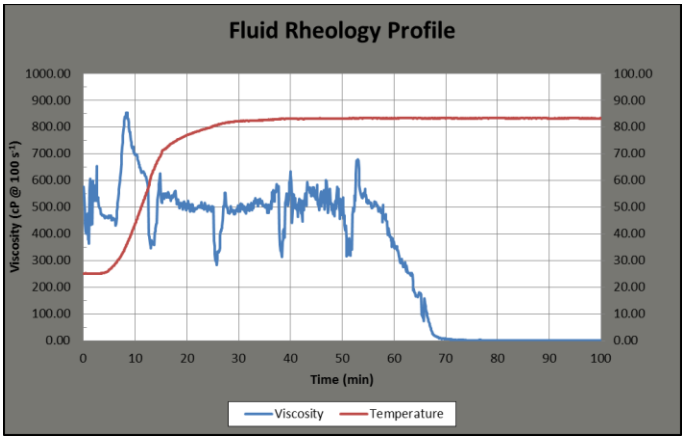

Figure 2: Breaker test of a 3.0 kg gel with 0.1 kg/m3 SCBO-2

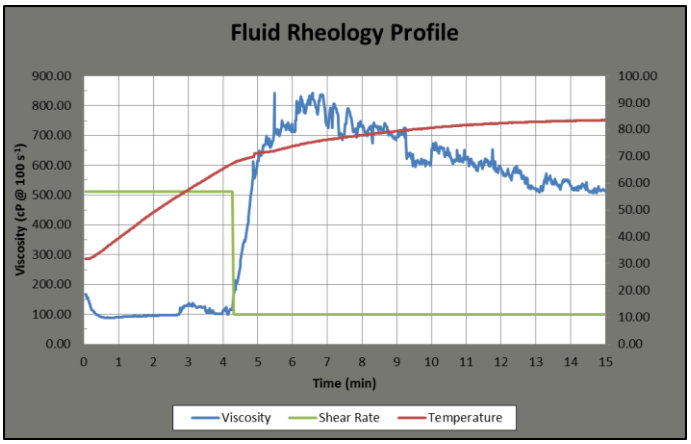

Figure 3: Shear recovery profile of a 3.0 kg gel after high shear simulating time to bottom