

Sanjel Energy's SURFACEmix THX cement blend solves your shallow gas formation challenges while delivering a healthy return on investment

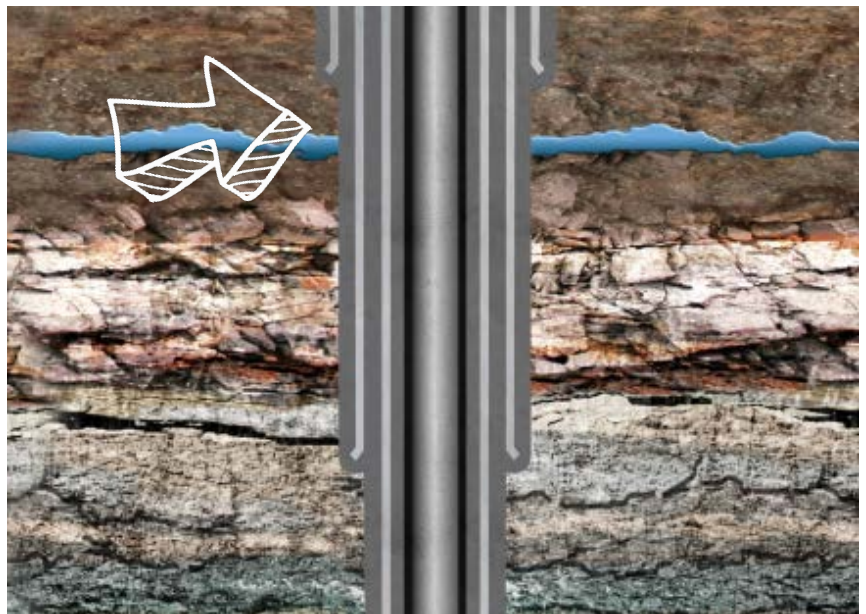
EMERGING TECHNOLOGY

Over the past decade, much of the Canadian energy industry's research and development efforts with regards to cementing systems have primarily focused on developing systems to successfully place in the horizontal producing lateral.

However, in recent years there has been an emerging trend of deeper surface casing profiles. This trend, when combined with the industry's economic challenges, has increased motivation to move towards lower density surface blends in an effort to reduce costs.

Lower density surfaces typically utilize Class C type cements to ensure drill out times remain as short as possible, while the cementing systems also typically include pozzolans to effectively reduce the density. Still, the lower density, and conversely the lower solids volume fraction and lack of any performance additives, may not be effective at preventing gas migration up the surface casing annular space. The shallow gas formations often found in SE Alberta and Saskatchewan have traditionally been problem areas on both surface and production casing jobs with low well temperatures making it difficult to achieve all desired slurry properties. This is especially true for a short critical interval and early compressive strength, as well as utilizing slurries with the lower densities desired by the industry.

The surface casing cement must provide isolation for the life of the well to protect groundwater and prevent gas from migrating from shallow formations up to surface along the cement interfaces to the casing or the formation.



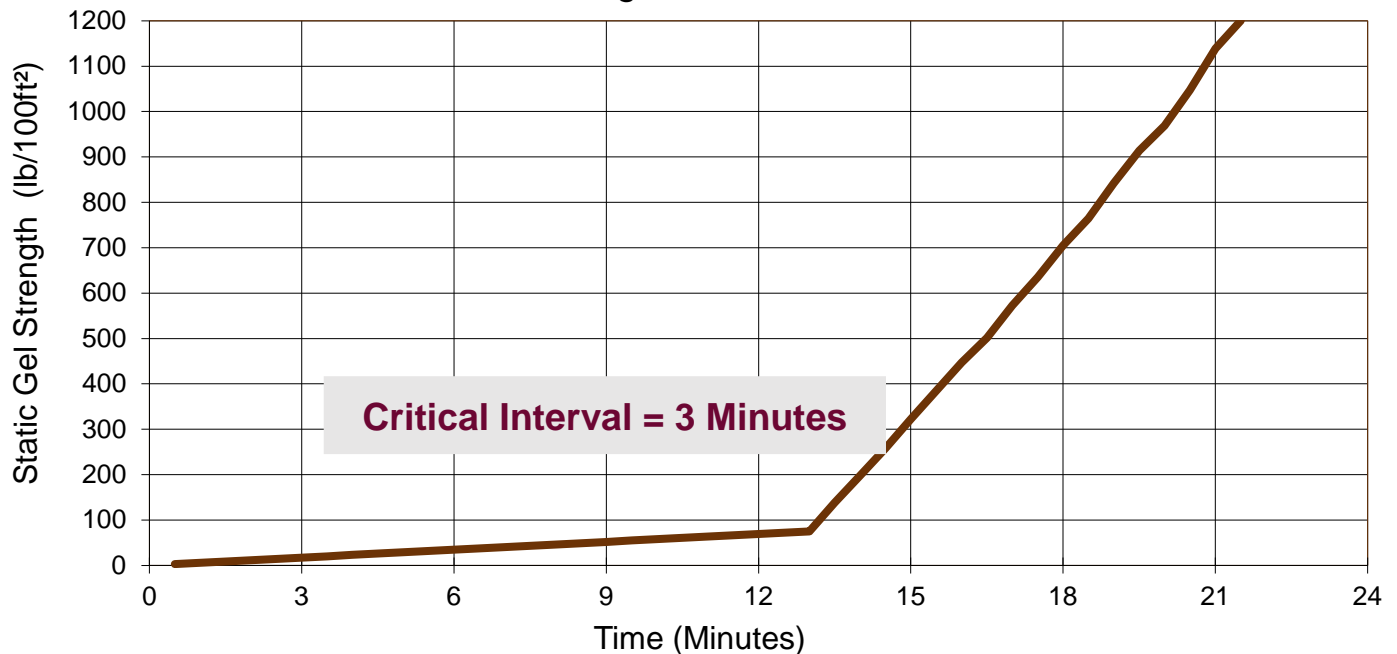


Sanjel Energy's SURFACEmix THX is an aggressive 1725 kg/m³ surface blend that contains an additive mixture not typically run in surface slurries. With the addition of fluid loss control and post set expansion minerals it effectively creates isolation in both the slurry and set cement forms. SURFACEmix THX delivers early compressive strength development and is high thixotropic with a short critical interval. Once placed, it resists gas or fluid inflow and prevents slurry fallback from surface.

SURFACEmix THX has been proven to:

- ◆ Drastically reduce occurrences of gas flowing up surface annulus as proven in the Mannville area in SE Alberta
- ◆ Limit slurry fallback after placement reducing the need for top off jobs
- ◆ Provide long term well integrity of surface casing annulus
- ◆ Reduce cement costs contributing to a healthy return on investment

Static Gel Strength of SURFACEmix THX



SURFACEmix THX has successfully performed 40 times in the Mannville and Shaunavon plays in 2018, eliminating gas migration in the surface annulus.