

Flexible Thermal Cement

The Next Generation of
Cementing Technology

A Sanjel Innovation in Development

Pride *by* Performance.



Sanjel

**Coming soon from Sanjel,
the next generation
thermal cementing solution.
A high density system
with improved FLEXIBILITY,
extending well-life and
ensuring complete
zonal isolation.**

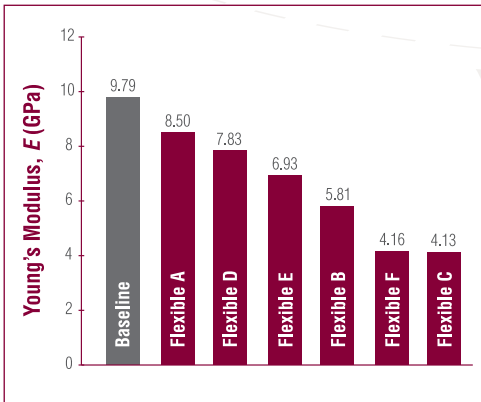
Cement Technology in Modern Wells

As a result of rapidly-evolving well completion techniques, the stresses experienced by the cement sheath are increasing. From extreme temperature cycling in SAGD injection wells, to multi-stage fracturing operations, cement is being exposed to thermal and cyclic stress gradients that traditional cement formulations did not anticipate. Even with successful cement placement, conventional cement blends, with high compressive strengths and high Young's moduli, may no longer provide long-term zonal isolation.

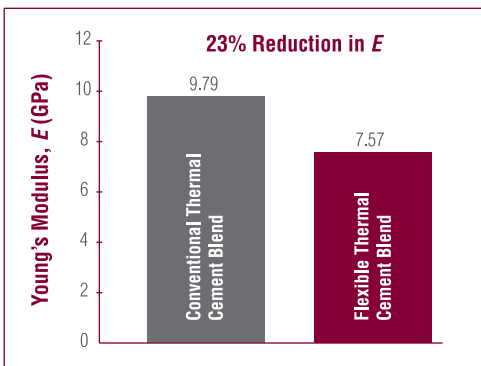
The Next Generation

Sanjel's latest innovation in cement technology is the development of a high density, expandable thermal cement system, that has far greater flexibility than "traditional" thermal blends of equivalent density. Physical characteristics such as Young's modulus are now widely recognized as critical factors in determining the durability and resilience of the cement sheath. Sanjel's new approach re-optimizes the mechanical properties of thermal cement blends to ensure integrity and performance over the complete lifecycle of the wellbore.

Thermal Cement Blends with Reduced Young's Moduli



Comparison of High Density Thermal Cement Blends



Features & Benefits

- High density system with improved flexibility, extending the well-life and ensuring complete zonal isolation.
- Low viscosity ensures successful slurry placement.
- Cement expansion prevents microannulus formation and reduces the risk associated with remedial operations.
- Slurry design incorporates gas-control additives, eliminating the risk of gas migration.
- Cement is thermally stable to 260 °C (500 °F), making it suitable for extreme temperature environments.

Worldwide Innovation, Commitment, Performance, and Results.

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