



**TS-NANO**

# Nano-Polymer Cement Modifier– TSN-23

## KEY FEATURES

- Compatible with standard cement mixing and pumping operations
- Tailored to various cement blends\*
- Limits fluid loss and eliminates cement shrinkage
- Non-toxic and environmentally safe formulation approved by regulators
- Excellent additive to cement at critical locations during well completion.
- Eliminate the need for other additives

## Overview

When conventional cementing struggles to prevent gas migration and long-term well integrity issues, **TSN-23**, a nano-modified polymer cement transformer developed by TS-Nano, provides a next-generation solution.

TSN-23 is a patented nano-modified polymer that is added to various cement blends to enhance their sealing performance, elasticity, ductility, and long-term durability for a wide temperature range of 10-120 °C (50-250°F).

Designed to improve the mechanical properties and durability of traditional cement, TSN-23 ensures superior bond strength, minimal fluid loss, no shrinkage, and resistance to gas migration, making it a reliable solution for wellbore integrity.

## BENEFITS TO THE CEMENT

- **Prevent gas migration:** Coalesces hydrating cement surfaces against gas channels with its high surface tension, combined with very fast transition time and high compressibility to prevent gas migration
- **Elastic and ductile:** The polymer-cement composite has high elasticity, ductility, and ultra-high cracking resistance against severe downhole conditions
- **Superior bond:** Excellent bond between the polymer-cement composite, casing, and the rock formation
- **Permanent seal:** Very low liquid and gas permeability, leading to very high durability against severe downhole conditions to last indefinitely

## Performance Highlights

Characteristic**	w/ Class-G Blend	w/ Class-C Blend
Thickening/Wait time (Below 40 BC)	2-4 hours	
Transition time (40-100BC)	< 20 minutes	
Compressive strength (24h)	+10.0 MPa / +1,500 psi	+11.0 MPa / 1,600 psi
Shear bond strength with casing (24h)	+3.5 MPa / 500 psi	+3.5 MPa / 500 psi
Shrinkage strain (24h)	0	0

\* Engineering designs and lab tests are required to account for the variances in different cement types  
 \*\* Lab tests at 70°C / 158°F.

## Contact Us

To learn more about TSN-23's technical specifications, field performance, or to request a case study, contact TS-Nano's technical team at:

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