

## BJSP-Lite Light Weight Slurry System

BJSP-Lite is a low density, high compressive strength cement slurry system. The system provides all the benefits of a conventional 1.9 SG slurry – fluid loss control, slurry stability and fluidity, high compressive strength – combined with the advantages of low hydrostatic pressures associated with conventional extended slurries.

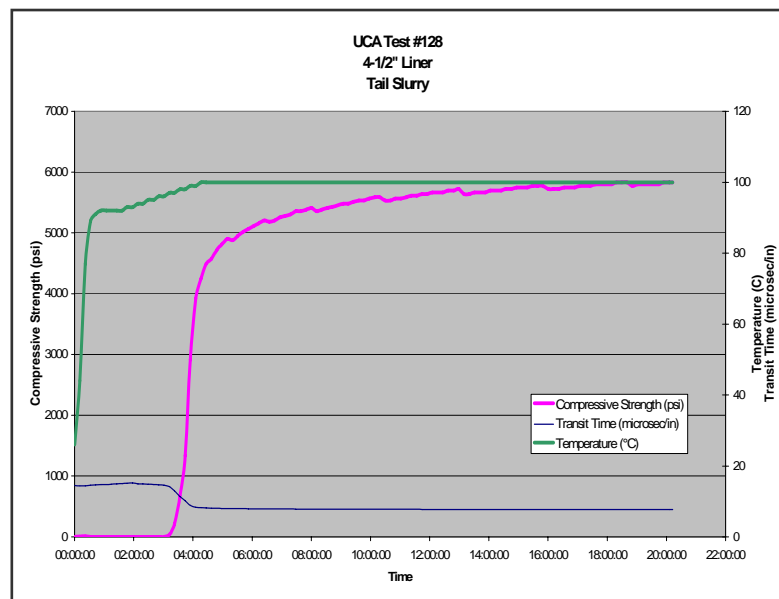
The system was developed by BJSP in Algeria to meet the demands of cementing the technical casing covering both Albian and Barremian formations. By utilising a lightweight, high strength system the section can be cemented in a single operation without the need to use stage tools. The Albian aquifer is isolated from the overlying salt layers while the Barremian is not exposed to pressures that could fracture the formation. Since its introduction in 1999 BJSP-Lite has been used on approximately 150 successful operations and the technology and procedures have since been adopted by other BJ Services' locations.

### Slurry Properties

BJSP-Lite slurries are typically mixed at densities in the range 1.3 - 1.45 kg/l. The lowest density slurry used to date is 1.25 kg/l.

Compressive strength values range from 2000 psi to 3500 psi depending on bottom hole temperature and slurry density.

If required, extra high compressive strengths can be achieved by replacing the API Class G Portland Cement used in most BJSP-Lite systems with ultrafine cement. Compressive strengths greater than 5000 psi have been attained with 1.46 kg/l slurry density (Sonarco, REB Field).



Slurry properties such as thickening time, rheology and fluid loss are controlled with conventional cement additives.

### System Components

The primary components of BJSP-Lite are API Class G Portland Cement, microspheres and microsilica.

# **BJSP**

*Where performance counts*

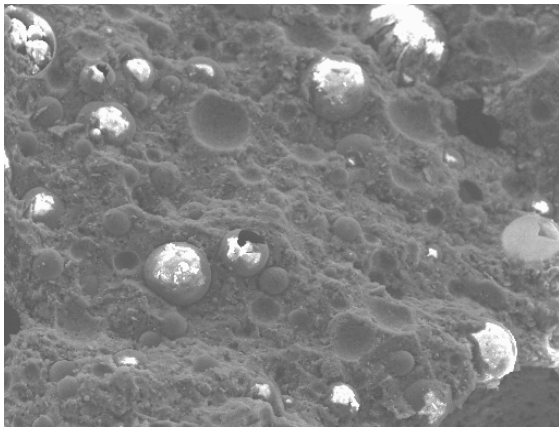
Any Class G cement can be used. The Portland Cement can be substituted by other cementitious material.

The microspheres (BJ Services' product code LW-6) is used as an extender. The light weight spheres (0.7 - 0.9 SG) allow the slurry to be mixed with minimal water thereby increasing compressive strength. Slurry porosity is typically around 50%.

The microsilica (BJ Services' product code BA-58L) is used as an extender and also contributes to the cement-pipe and cement-formation bonds.

## **Mixing**

All BJSP-Lite components, including the microspheres, are added directly to the mix water in a batch tank or batch mixer. This eliminates the need to dry-blend cement and additives.



Agitation and re-circulation of the mix water ensures the microspheres are evenly distributed. The prepared mixwater and cement are mixed "on the fly". Uniform slurry densities are easily achievable.

The SEM photograph on the left clearly shows the uniform distribution of the LW-6.

Having a cement column of uniform density is vital when there is a potential for breakdown of weak formations.

## **Applications**

Since its introduction in 1999 BJSP-Lite has been used to cement 13-3/8" & 9-5/8" casings as well as 7" and 4-1/2" liners in reservoir sections.

Over 150 operations have been performed for a number of operators including Agip, Amerada Hess, BHP Billiton, Burlington Resources, Cepsa, Gulf Keystone, Sonarco (BP) and Sonatrach.

All operations have been successful with CBL results ranging from moderate to excellent.