



PrimeFlow Admixture Range

Specially Formulated Admixtures for Various Concrete Needs

Primekss was approached by a client to help achieve a very high early-age concrete compressive strengths while retaining the desired slump for appropriate workability. The end application of the concrete was production of Pre-Stressed Pre-Cast Concrete Piles for a 33,000m³ piling project near Lagos, Nigeria. Only locally produced cement and aggregates were available for the project. The concrete was to be mixed in a 60CM/Hr new concrete batching plant installed especially for the needs of the project.

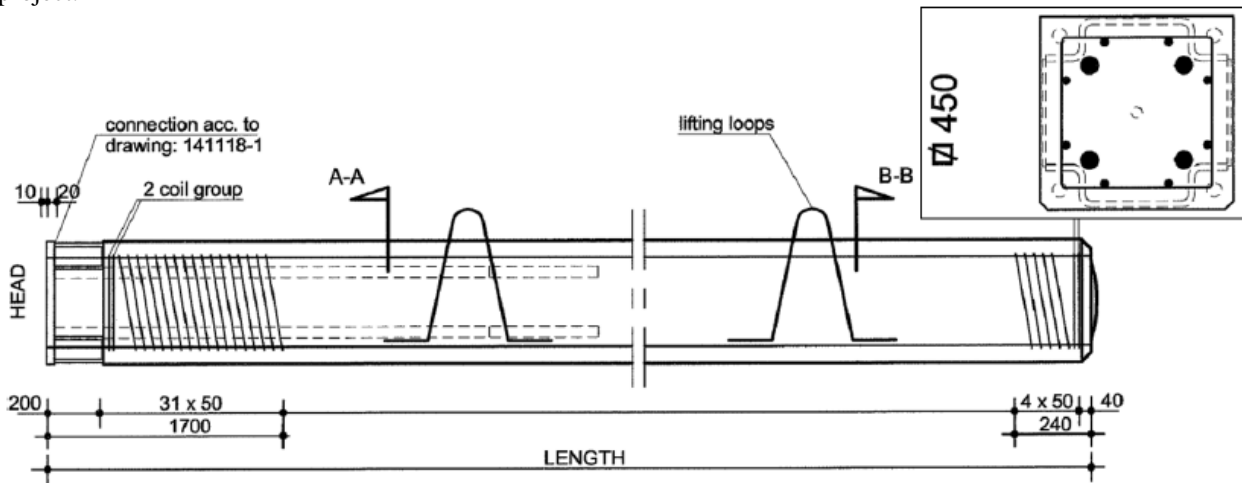


Figure 1: Details on the design of a Pre-Stressed Pre-Cast Concrete Pile to be used for the piling project in Lagos, Nigeria



Figure 2: Concrete batching plant used for the project





CASE STUDY – OVERVIEW

PROJECT REQUIREMENTS

The client required the following target compressive strengths:

- **24 hrs** strength: **C25/30** (30 MPa in 150x150x150 mm cube compressive strength);
- **7 days** strength: **C45/55** (55 MPa in 150x150x150 mm cube compressive strength).

The slump retention at **30 minutes** was required to be a minimum of **100 mm**.

The project's specific limitations were such that only CEM I 52.5N grade cement from a certain product could be used, which made it extremely difficult to achieve the desired strength targets in the absence of special concrete admixtures.

PRIMEKSS – SCOPE

- To engineer the most optimized concrete mix design suitable for the purpose;
- To supply specially formulated admixtures – *PrimeFLOW-P* and *PrimeFLOW-K*, for accelerating and the strength gain;
- To establish the target strengths and slump retention by the way of lab trials;
- To fine-tune and further establish the concrete strengths and slump retention for actual production of the piles.

TRIAL PHASE

Primekss shipped 50 KG of PrimeFLOW-P and 25 KG of PrimeFLOW-K specially formulated concrete admixtures to the client in Nigeria.

Primekss coordinated the field trial mixes in a lab near site in Nigeria. The trials were physically conducted by client's team, with remote supervision and daily monitoring by PrimekssLabs. Primekss established the desired results through the final mix design in 200 test cubes within 15 days of initiating the trials.

Advanced Construction Technology who is collaborated with PRIMEKSS has deputed an Engineer to Nigeria for carrying out Trial mixes.

The final mix design was further fine-tuned at the time of production of the test piles at full scale.

The strength achieved for final mix design above 28c was 70Mpa and below 28c was 71Mpa.

FINAL RESULTS – OUTRIGHT SUCCESS!

- The target strengths were met with a significant margin
- Desired slump retention was achieved both in lab and at full scale
- Cement consumption was reduced by 10% from the initial estimates (by 50 kg/m³), even with significantly higher early age strengths
- Client was delighted as Primekss products and services helped the client meet the production timelines

ABOUT PRIMEKSS

Since 1997, Primekss has installed quality floors and rafts in industries ranging from agriculture to high-tech electronics, from pharmaceuticals to automated guidance vehicle (AGV) logistics, as well as in a host of office and shopping buildings.

PrimeComposite, made by Primekss

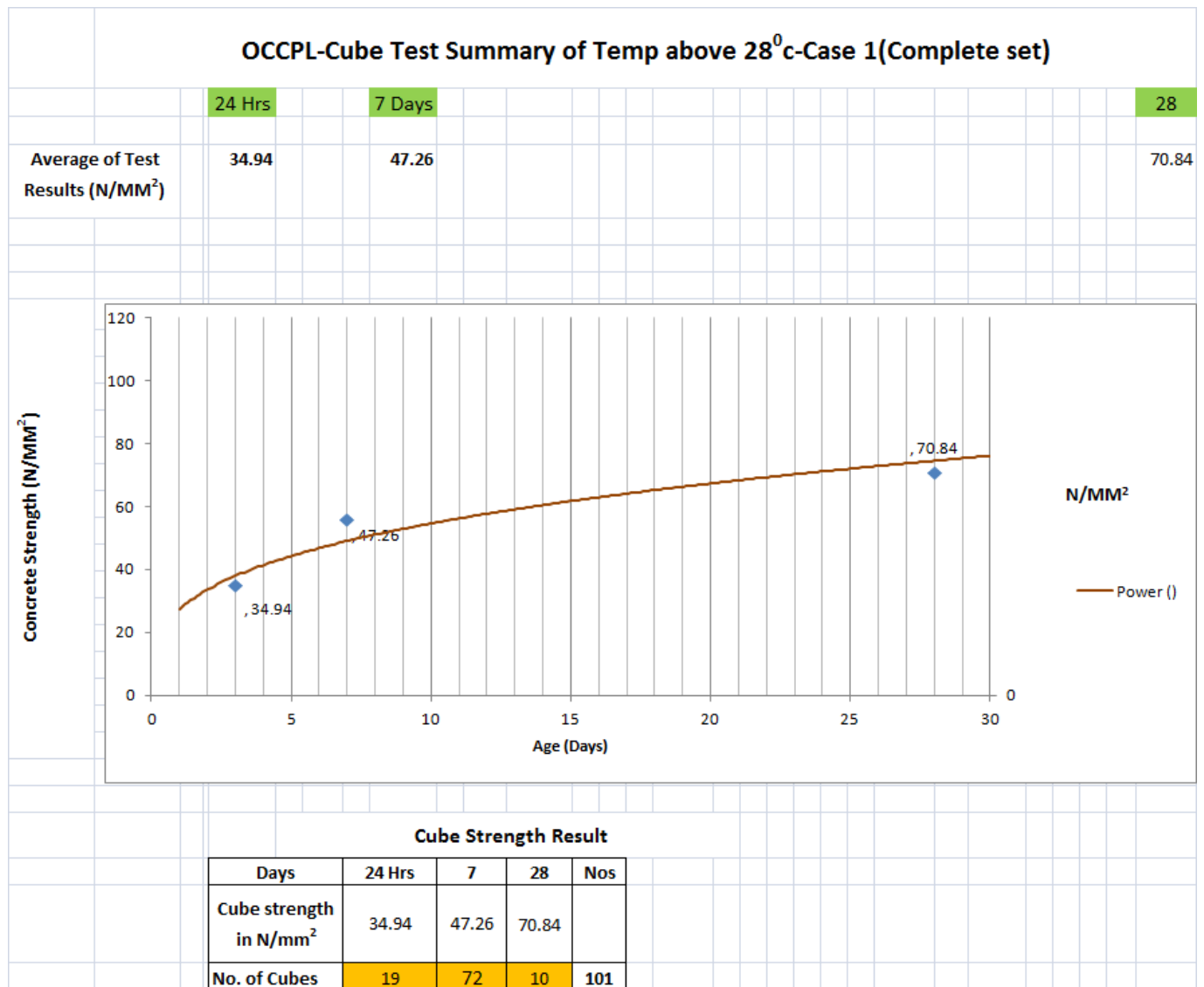
- no cracks- no problems with water seepage in foundations
- very fast to install saving weeks of construction
- elimination of joints
- increased tensile, compression, shear and flexural strength;
- high impact strength;
- remarkably reduced need for maintenance
- safer at the building site
- speed of installation





CASE STUDY – OVERVIEW

LAB TESTS:

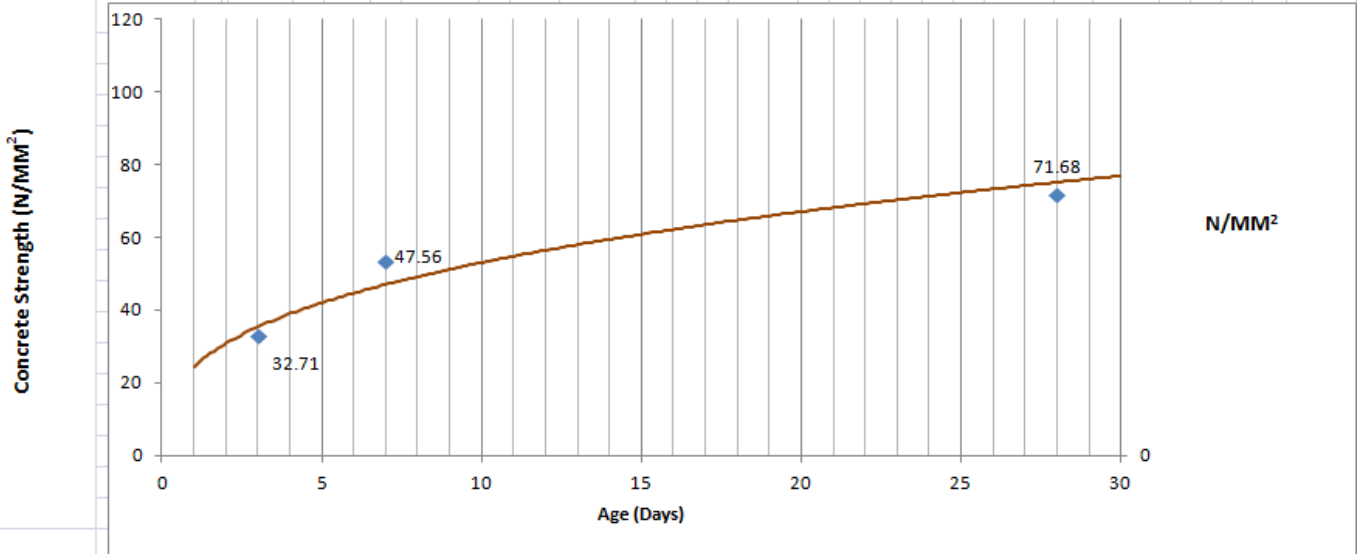




CASE STUDY – OVERVIEW

OCCPL- Cube Test Summary of Temp 24⁰c to 28⁰c - Case 2 (Complete Set)

	24 Hrs	7 Days	28
Average of Test Results (N/MM ²)	32.71	47.56	71.68



Cube Strength Result

Days	24 Hrs	7	28	Nos
Cube strength	32.71	47.56	71.68	
No. of Cubes	40	60	6	106

