



Physico: Chemistry of Cement Part (2)

DURATION

5 days

CONTACT HOURS

30

LEVEL

Intermediate

FEE PER DELEGATE

US\$1,500

Part two: hydration. The reactions that turn cement powder and water into a hardened solid.

Where part one establishes the solid state chemistry of the clinker phases, part two follows what happens when water is added. It covers the hydration reactions phase by phase, the heat they release and the stages of the hydration curve, the microstructure that develops as hydration products fill space, and the role of sulphate in keeping the aluminate reaction under control. Admixture interaction closes it, since that is where hydration chemistry meets the ready mix truck.

Available as classroom, live online, in house.

Who it is for

Laboratory chemists and quality staff, process and product development engineers, concrete technologists, and technical sales staff handling performance questions.

What you will be able to do

- Describe the hydration reaction of each clinker phase.
- Read a calorimetry curve and name the stages.
- Explain microstructure development and its link to strength.
- Account for sulphate's role in controlling early reaction.
- Predict how an admixture will interact with a given cement.

The outline

DAY 1

The reactions

Silicate hydration and calcium silicate hydrate · Aluminate and ferrite reactions · Portlandite and the pore solution

DAY 2

Kinetics

Induction, acceleration and deceleration · Calorimetry and what the curve shows · Temperature dependence

DAY 3

Microstructure

Space filling and porosity · The link between porosity and strength · Transition zone in concrete

DAY 4

Sulphate

Why gypsum is added · Optimum sulphate and how it is found · False set, flash set and their causes

DAY 5

Admixtures

Water reducers and superplasticisers · Retarders and accelerators · Incompatibility, and how it shows up on site

What you leave with

- A calorimetry interpretation from real data.
- A sulphate optimisation worked example.
- An admixture compatibility checklist.

Published dates

DATES	WHERE	FEE
23 to 27 November 2026	Lagos, Nigeria	US\$1,500
30 November 2026 to 4 December 2026	Gaborone, Botswana	R15,000
7 to 11 December 2026	Nairobi, Kenya	US\$1,500
14 to 18 December 2026	Accra, Ghana	US\$1,500

Fees are per delegate and cover all course materials. Travel and accommodation are arranged by the delegate. Reg

Register or ask a question

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