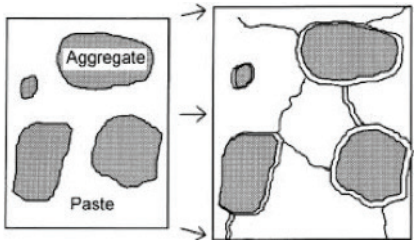
PCI Plant Quality Talk
Quality Enhancement Committee

SERIES 1, ISSUE 2 – DELAYED ETTRINGITE FORMATION

Delayed Ettringite Formation (DEF). Sulfate compounds react with calcium aluminate in cement to form ettringite within the first few hours after mixing with water. If concrete is exposed to high temperatures during curing, the ettringite can dissolve and later reform when exposed to moisture, creating expansive forces within the concrete.

Common Issues

- Expansion and cracking can occur in concretes of particular chemical makeup when they have achieved high temperatures soon after placement (about 160 to 210°F).
- This delayed expansion is characterized by expanding paste that becomes detached from various components of the mixture, creating gaps at the paste-aggregate interface. The gap can then be filled with larger ettringite crystals.



Best Practices

- Use sound (proven) aggregate.
- Cure below 158°F for straight cement mixtures and below 170°F for SCM (Supplementary Cementitious Material) mixtures, after initial set (104°F max. during initial set).
- Use SCMs to mitigate the reformation of ettringite.

Note: Please complete this form and return to the Quality Control Manager. All crew members should be observant and report to their foreman anything out of the ordinary on a project. *See something, say something.*

NOTES	ATTENDEE SIGNATURES
DATE _____	_____
PRESENTER _____	_____
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