

Accepted Manuscript

Ordinary Portland Cement composition for the optimization of the synergies of supplementary cementitious materials of ternary binders in hydration processes

Á. Fernández, J.L. García Calvo, M.C. Alonso



PII: S0958-9465(18)30248-8

DOI: [10.1016/j.cemconcomp.2017.12.016](https://doi.org/10.1016/j.cemconcomp.2017.12.016)

Reference: CECO 3013

To appear in: *Cement and Concrete Composites*

Received Date: 24 July 2015

Revised Date: 2 August 2017

Accepted Date: 12 December 2017

Please cite this article as: Á. Fernández, J.L. García Calvo, M.C. Alonso, Ordinary Portland Cement composition for the optimization of the synergies of supplementary cementitious materials of ternary binders in hydration processes, *Cement and Concrete Composites* (2018), doi: 10.1016/j.cemconcomp.2017.12.016.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Ordinary Portland Cement composition for the optimization of the synergies of supplementary cementitious materials of ternary binders in hydration processes

Á. Fernández^a, J. L. García Calvo^a, M. C. Alonso^{a,*}

^aInstitute for Construction Sciences Eduardo Torroja. CSIC. Serrano Galvache 4. 28033

Madrid. Spain

Abstract

The synergistic effects of using several supplementary cementitious materials (SCMs), such as Blast Furnace Slags plus Limestone Filler or Fly Ashes, depend on the OPC composition. When using an OPC which is poor in C_3A and alkalis in ternary formulations, a similar initial strength gain to that of a plain OPC is detected and at longer hydration ages, the formation of monocarboaluminate, hemihydrate and hydroxycarbonate instead of monosulphate can be seen. If an OPC with a higher C_3A content and alkalis is used with SCMs, the higher availability of Al causes the early formation of monocarboaluminate and a lower initial strength gain. At longer hydration times, in ternary blends with both OPCs, the mechanical strengths are higher and the C-S-H gels formed are richer in Al and poorer in C/S ratio with a subsequent lowering of the alkali content in the pore solution when compared to that in plain OPC.

* Corresponding author. Tel. +34 91 302 0440. Fax. +34 91 302 0700
e-mail: mcalonso@ietcc.csic.es (M. C. Alonso).

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات