



New cements for the 21st century: The pursuit of an alternative to Portland cement

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ARTICLE INFO

Article history:

Received 14 March 2011

Accepted 25 March 2011

Keywords:

Alkali activated cements (A)

Microstructure (B)

Gel N–A–S–H (C)

Gel C–S–H (D)

Hybrid cements

ABSTRACT

Preparation of this article entailed authors analyzing the contents of quite a number of papers, although the main objective was *never to review the state of the art* of new cements. Rather authors intend to discuss why they believe alkaline activated cement can be positioned at the epicentre of a new and necessary transition from today's Portland cement to the new cements of the future. A brief history of alkaline cements serves as an introduction to the technology itself. The interest roused around calcium sulfoaluminate-based cements is also reviewed, albeit summarily. The greater part of the article focuses, however, on alkaline cements which are classified into five categories. The fundamental chemical and structural characteristics of aluminosilicate-based alkaline cements are also described, and the key advances made in the understanding of synthetic gels are discussed. The paper ultimately finds *hybrid cements* to be technologically viable materials for contemporary construction.

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1. Introduction

In certain closed ecosystems herds of herbivorous species graze on pastures unchecked. Under these conditions, the herd size gradually increases to a point at which it can no longer be sustained because of

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