

Greek fly ash as a cement replacement in the production of paving blocks

**Nikolaos Koukouzas¹, Ioanna Papagianni², Eleni Tsikardani³,
Dimitra Papanikolaou¹, Chrisovalantis Ketekidis¹**

¹Centre for Research and Technology Hellas, Institute for Solid Fuels Technology and Applications, 4th km of National Road Ptolemais – Kozani, GR – 501 00, Ptolemais, GREECE, tel: +30 2463 0 53842, fax: +30 2463 0 53843, e-mail: koukouzas@techp.demokritos.gr

²Polytechnical School, Department of Civil Engineering, Laboratory of Building Materials, P.O Box 482, University Campus, 54124 – Thessaloniki

³Department of Pollution Control Technologies, Technological Educational Institute (TEI) of West Macedonia, Kozani, Kila, 50100

KEYWORDS: Greek fly ash, cement products

ABSTRACT

The fly ash produced at the power stations of the Ptolemais region in Northern Greece is rich in Ca due to the origin of the lignite burned and as a consequence it is characterized as a class C fly ash. Because of the high Ca content its use in the concrete production and the production of products originating from concrete is restricted in Greece and only 10% of the produced fly ash is used for the production of cement. The remaining amount is deposited in mines causing environmental and financial problems.

In this paper a research was conducted in order to examine the possibilities of the Greek fly ash utilization in other application than cement production such as the production of paving blocks from concrete containing fly ash. For this reason paving blocks were produced from concrete including diverse proportions of fly ash which came from the Ptolemais thermal power plant. The aforementioned products were produced in the frame of the project 'k-clusters: development of new products with use of fly ash from Western Macedonia'. The qualitative characteristics of the produced products were investigated as well as their mechanical properties, characteristics which were correlated direct with the properties of the fly ash and the proportion of fly ash used for cement replacement.

Submitted for consideration in the 2007 World of Coal Ash Conference, May 7-10, 2007.