USE OF CLASS C FLY ASH IN CONCRETE
AND OTHER CONSTRUCTION MATERIALS

By

Tarun R. Naik, Ph.D., P.E.
Director, Center for By-Products Utilization
Department of Civil Engineering and Mechanics
College of Engineering and Applied Science
The University of Wisconsin-Milwaukee
P.O. Box 784, Milwaukee, WI 53201

and

J.A. Lechuga, and S. Alegre
CABI, SA, Barcelona, SPAIN

*For Presentation and Publication at the Malhotra Symposium on
Concrete Technology - Past, Present and Future to be held in
ABSTRACT

This paper provides extensive review of the previous work on the utilization of Class C fly ash in concrete and other construction materials. Recent data on strength and durability characteristics of structural and high-performance concrete as well as other construction materials obtained at the Center for By-Products Utilization, and elsewhere (Spain, Greece, etc.) are included in the paper.

Data from a large number of studies have shown that structural grade concrete can be proportioned to use high volumes of Class C fly ash (up to 70% cement replacement by fly ash) without sacrificing performance with respect to strength and workability requirements.

More recent investigations conducted at the Center for By-Products Utilization and elsewhere have revealed that high strength concretes incorporating a significant amount of Class C fly ash and other pozzolanic materials can be proportioned to obtain strengths up to 100 MPa. Such concretes have also shown a very low chloride ion permeability.
Extensive research conducted at the Center for By-Products Utilization has led to development of controlled low strength materials (CLSM) with high-lime fly ashes and necessary water to produce a high degree of flowability. Test results have shown that this type of material is appropriate for pipe bedding, utility duct envelopes, filling excavations under structural foundations, as a high quality road base, and other similar applications.