

Production of Plates Based on Coal Fly Ash for Their Use as Insulating Materials in Doors and Firebreak Walls

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ABSTRACT

This work deals with the manufacturing of panels using fly ash coming from the combustion of pulverized coal in a power plant, and other materials, for their potential use as insulating elements in doors and firebreak walls. Plates of different thickness have been manufactured and have been conformed by simple compaction, using a high proportion of fly ash (higher than 60% w/w).

To justify the behavior of the materials, different analytical techniques have been used, with the object of studying the thermal processes produced and the nature of the mineral phases that make up the fireproof products. The densities and the compressive and bending strength of the plates have also been determined.

To study the insulating capacity of the panels, an oven has been designed that has reproduced at a pilot scale the standardized fire resistance test applied to doors and firebreak walls. Thus, one of the faces of the plates has been subjected to the normalized heating curve and both the temperatures of the exposed and unexposed faces have been registered. The results indicate that some of the manufactured products have insulating properties similar or better than other commercial products, and consequently, it is possible to produce insulating elements from blends rich in fly ash, by means of simple, cost-effective processing methods.