

Kinetic study of the thermal and thermo-oxidative degradations of Geopolymer Composites

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Abstract

In the last two decades, a new binder or cement roughly comparable to hydrated cement in appearance, reactivity and properties has been developed and applied, the geopolymer [1]. Its success was due to a lower environmental impact, with respect to the traditional Portland cement (OPC), for similar performance. Geopolymer, in fact, possesses a three-dimensional aluminosilicate network structure with similar bind performances to those of OPC, but its preparation (geopolymerization), occurring under mild conditions and with lower CO₂ emission, is considered as a cleaner process than that from the production of cement [2]. More recently, its environmental performance has increased, enclosing the use of fly ash as an alternative source to make geopolymer, providing an alternative good solution to the utilization of this fine solid particulate considered a hazardous material if improper disposal [3].

The geopolymer technology provides a new good and green solution to the utilization of fly ash, avoiding its negative impact on environment and ecology, but there is a need for durability information about this new formulation. In this study, we present a kinetics study of geopolymer degradation aiming at obtaining useful information about the lifetime performance of fly ash-geopolymer materials.

References

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