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PERFORMANCES EVALUATION OF PORTLAND CEMENT PRODUCED FROM DOPED CLINKERS

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Abstract

This study aims to obtain high performance cement under friendly environmental conditions, through the optimization of clinkerization process. The influence exerted by mineralizers i.e. fluoride (NaF, KF) or oxide (CuO, TiO_2) on the Portland clinker characteristics and derived cement properties is presented in this experimental study. The presence of these additions in low concentration (i.e. 0.5-0.8 wt. %) permits the reduction of the burning temperature (with 20°C up to 70°C) of raw mix and modifies clinker phases morphology, grindability and reactivity. The cements obtained by doped clinkers intergrinding with 5% gypsum can be classified as 42.5N/R or 52.5N while the reference cement belongs to 42.5N strength class according to EN 197-1. Other cement properties i.e. water for standard consistency, setting time, soundness and hydration heat were also assessed. A brief analysis regarding the benefits of cement obtained from doped clinker as compared with reference clinker was also done.

Key words: environmental protection, mineralizers, Portland cement

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