Fly Ash In Concrete: What Happens In The System?

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ABSTRACT

The paper presents test results in the framework of a research carried out to get a better understanding of the main powder coal fly ash parameters which influence the quality of concrete. The paper presents results of carbonation, freeze thaw tests and sulphate resistance tests as well as strength tests. The results indicate that young fly ash concrete shows a higher carbonation rate than reference concrete due to the higher starting permeability, however the carbonation rate decreases with an increasing curing time and the pozzolanic activity. Fly ash with a low carbon content does not have a detrimental effect on the freeze thaw resistance. Factors such as curing regime, curing time, strength and air content have a greater influence than the fly ash addition. The sulphate resistance is improved by the addition of fly ash. The influence of the water cement ratio is explained in combination with the pozzolanic activity.
The paper concludes with test results of concrete with ground granulated blast furnace slags.

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