

Use Of An Unprocessed Landfill Ash For Application In Concrete.

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Abstract:

An investigation was carried out to establish the physical, mechanical and durability characteristics of an unprocessed pulverised fuel ash (PFA) from a former landfill site at the Power Station Hill near Church Village, South Wales, United Kingdom. This was aimed at establishing the suitability of the ash in the construction of the Church Village Bypass (embankment and pavement) and also in concrete to be used in the construction of the proposed highway. Concrete made using binder blends using various levels of PFA as replacement to Portland cement (PC) were subjected to compressive strength tests to establish performance. The concrete was also subjected to sodium sulphate attack by soaking concrete specimens in sulphate solution to establish performance in a sulphatic environment. Strength development up to 365 days for the concrete made with PC-PFA blends as binders (PC-PFA concrete), and 180 days for the PC-PFA paste, is reported. The binary PC-PFA concrete did not show good early strength development, but tended to improve at longer curing periods. The low early strength observed means that PC-PFA concrete can be used for low to medium strength applications for example blinding, low-strength foundations, crash barriers, noise reduction barriers, cycle paths, footpaths and material for pipe bedding.