

# uction: composite use of tyres and ash in concrete.

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## Abstract

An investigation was carried out to establish the physical, mechanical and chemical characteristics of a non-standard (unprocessed) pulverised fuel ash (PFA) and waste tyres from a former landfill site at the Power Station Hill near Church Village, South Wales, United Kingdom. Investigations are on-going to establish the suitability of the fly ash and/or tyres in road construction (embankment and pavement) and also in concrete to be used in the construction of the proposed highway. This paper reports on concrete-based construction where concrete blends (using various levels of PFA as partial replacement for Portland cement (PC), and shredded waste tyres (chips 15-20mm) as aggregate replacement) were subjected to unconfined compressive strength tests to establish performance, hence, optimising mix designs. Strength development up to 180 days for the concrete made with PC-PFA blends as binders (PC-PFA concrete), with and without aggregate replacement with tyre chips, is reported. The binary PC-PFA concrete does not have good early strength but tends to improve at longer curing periods. The low early strength observed means that PC-PFA concrete cannot be used for structures, hence, only as low to medium strength applications such as blinding, low-strength foundations, crash barriers, noise reduction barriers, cycle paths, footpaths and material for pipe bedding.