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**Fly Ash as a backfill material-A geotechnical investigation**

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Combustion of South African coal produces alkaline fly ash (FA). Several authors have shown that FA can control acid mine drainage (AMD) generation *in situ* in mine spoils [1, 2, 3]. The ash increases the pH and immobilizes the contaminant elements as amorphous hydroxides or oxy-hydroxides [2, 4]. Furthermore, South African FA was also investigated as a backfill material [3, 5]. Backfilling of mines using FA will address two key issues: it will reduce the rate of AMD generation and FA storage problem.

Mine backfilling using FA slurry's physical, chemical and rheological properties are well understood. However, behaviour of FA in mine voids under dynamic loading (like seismic activity) is not well understood and therefore it is critical to evaluate these properties of FA as a backfilling material especially in Gauteng province where mine related seismicity is increasingly felt. The performance of FA as a backfilling material in mine voids will mainly depend on engineering characteristics such as shear modulus, damping and liquefaction potential in addition to their regular geotechnical properties (e.g. shear strength, permeability, compressibility etc.). These properties of FA slurry were evaluated under laboratory conditions and discussed in this paper.

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