

## Assessment of the Potential of Fuel-derived Rice Husk Ash as Pozzolanic Material

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**Abstract :** Fuel-derived rice husk ash (FRHA) is a waste material from industries employing rice husk as a biomass fuel which, on the downside, causes disposal and environmental problems. To mitigate this, the FRHA was evaluated for use in other applications such as a pozzolanic material for the construction industry. In this study, the assessment of the potential of FRHA as pozzolanic supplementary cementitious material was conducted by determining the chemical and physical properties of FRHA according to ASTM C618, evaluating the fineness of the material according to ASTM C430, and determining its pozzolanic activity using Luxan Method. The material was found to have a high amorphous silica content of around 95.82 % with traces of alkaline and carbon impurities. The retained carbon residue is 7.18 %, which is within the limit of the specifications for natural pozzolans indicated in ASTM C618. The fineness of the FRHA is at 88.88 % retained at a 45-micron sieve, which, however, exceeded the limit of 34 %. This large particle size distribution was found to affect the pozzolanic activity of the FRHA. This was shown in the Luxan test, where the FRHA was identified as non-pozzolan due to its low pozzolanic activity index of 0.262. Thus, further processing must be done to the FRHA to pass the required ASTM fineness, have a higher pozzolanic activity index, and fully qualify as a pozzolanic material.

**Keywords :** rice husk ash, pozzolanic, fuel-derived ash, supplementary cementitious material

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