



ECO FRIENDLY LIGHT WEIGHT GEO POLYMER CONCRETE FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

The global cement industry contributes around 1.35 billion tons of the green house gas emissions annually, or about 7% of the total man-made greenhouse gas emissions to the earth's atmosphere. Due to the production of Portland cement, it is estimated that by the year 2020, the CO² emissions will rise by about 50% from the current levels. Therefore, to preserve the environment from the impact of green house gases released during the production of cement, there should be some alternative materials to replace Portland cement. In this context, the Geo polymer concrete is one of the revolutionary developments related to novel materials resulting in low-cost and environmentally friendly material. The normally used coarse aggregate which is granite broken stone partially replaced with coconut shell aggregates and it is lighter than granite stone and it is also an agricultural by product from coconut industries which is disposed as waste material. The study reveals that partial replacement of granite stone aggregate with coconut shell light weight aggregate can be done for making light weight geo polymer concrete which can be used for reinforced concrete construction and also for making light weight concrete elements.

Key words: Geo Polymer Concrete, Coconut Shell, Fly Ash, Alkaline Solution, Compressive Strength, Split tensile strength, Flexural strength.

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