

عنوان مقاله:

Structural Performance of Sustainable Waste Palm Oil Fuel Ash-Fly Ash Geo-polymer Concrete Beams

محل انتشار:

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خلاصه مقاله:

This study is an attempt to highlight the use of Palm Oil Fuel Ash (POFA) with Fly Ash, instead of cement, in reinforced concrete beams. POFA, a waste from Palm oil mill and Fly Ash, a waste from coal-burning power stations which are cheap and available. It is expected that millions tonnes of palm oil waste will be produced annually and a lot of money will be spent to transport and maintain the waste. Environment is also being destroyed by the emission of CO₂ in Portland cement industries (global warming). Hence, it has become necessary that the study efforts in using of Geo-polymer concrete gain greater attention. In this study, laboratory tests were carried out to determine flexural strength, deflection and crack pattern for three kinds of materials that were used in reinforced concrete beams [POFA-Fly Ash Geo-polymer concrete, Fly Ash Geo-polymer concrete and OPC (Ordinary Portland Cement) concrete]. The experimental result showed that the behaviour of reinforced POFA- Fly Ash concrete beams was similar to reinforced OPC concrete beams since the cracking and ultimate moments of them were close together in 90th day. Regarding to durability study, POFA-Fly Ash concrete had a better resistance and performance against acidic conditions in comparison with OPC concrete due to more density and uniformity which was proved by ultrasonic pulse velocity (UPV) test

کلمات کلیدی:

Waste Geo-polymer Concrete Beam; Flexural Strength; Deflection; Crack Pattern; Acidic Conditions, UPV Test

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