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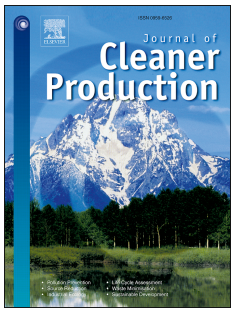

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Durability and Mechanical Properties of Self-compacting Concrete Incorporating Palm Oil Fuel Ash

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List of keywords: Self-compacting concrete; Palm oil fuel ash; Durability; Mechanical properties; Microstructure; Shrinkage.

Abstract

As worldwide electricity consumption has increased, so too has the waste of electricity. Palm oil fuel ash is a waste material generated in power plant due to burning of palm oil industry waste as a fuel to generate electricity. Annual production of such a massive amount of waste requires a huge disposal field that would be a threat to the environment. Therefore, due to the abundance and high pozzolanic characteristics, palm oil fuel ash has attracted many researchers to evaluate the potential of its use in constructional materials. In this study, self-compacting concretes were produced by incorporation of palm oil fuel ash at 10, 15 and 20% by weight of Portland cement and their mechanical and durability potential were evaluated under normal, acid and sulfate attack conditions. It was observed that incorporation of palm oil fuel ash in self-compacting concrete enhanced the acid and sulfate resistance, reduced the dry shrinkage and surface water absorption of the self-compacting concrete without an adverse effect in final compressive strength of the products.

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