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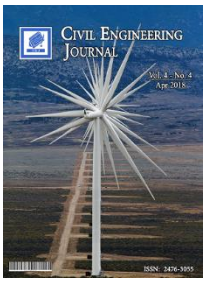

Compressive Strength by Incorporating Quarry Dust in Self-Compacting Concrete Grade M35

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Abstract

The study has conducted to determine the workability and compressive strength of the self –compacting concrete. The sand has replaced with quarry dust with the proportion of 10, 20, 30 and 40% and super plasticizer was added 0.9%. The experiments were carried out at the Infrastructure University Kuala Lumpur (IUKL) concrete laboratory. Slump flow, J-Ring tests were carried out to determine the workability of self-compacting concrete and compressive strength test was conducted on 7 days and 28th days of curing period. A finding of the study shows that workability and compressive strength has increased by addition of quarry dust. It is concluded that addition of quarry dust up to 30% improve the workability of the self-compacting concrete and further addition of quarry dust decrease the workability. Additionally, compressive strength of the quarry dust modified self-compacting concrete shows the trend of higher compressive strength up to 30% addition of quarry dust with sand replacement and further addition decrease the compressive strength.

Keywords: Quarry Dust; Self-Compacting Concrete; Workability; Compressive Strength.

1. Introduction

Concrete/cement based product is the most significant composite material in all mankind history. Concrete most commonly use in the building infrastructure from decades and expected to continuously use in the future due to the significance such as abundantly availability across the globe, reasonable cost, easy transportation, placement, compaction, high sustainability, durability, high compressive strength and has ability to use in all kind of environment [1-2]. In the modern concept of building infrastructure the demand for concrete material has increased. Poorly compacted concrete consequently has non-durable concrete structures therefore ordinary concrete need skilled operators to handle in the complex concrete projects. The concrete durability and compaction related problem was addressed by Okamura in 1986 [3] and [4] in the Tokyo University by developing self-compacting concrete (SCC) also called Self-consolidating concrete. In the construction industry self-compacting concrete (SCC) is among the best development [5]. Self-compaction is the fresh concrete to stream under its own weight over a long separation without segregation and without the need to utilize vibrators to accomplish legitimate compaction. SCC has increased more extensive application such as saves labour and compaction noise produced by vibration [6]. The main aim of self-compacting concrete development is to produce compaction free concrete more durable and sustainable concrete that can easily mold in any shape. The consolidation of ordinary concrete is not easy in the complex structure so it was necessary to develop concrete withstand

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