

The Reuse of Cement Dust in Concrete Mixtures and Studying its Effect on the Compressive Resistance of Produced Concrete^{*}

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Abstract

Cement factories in Syria are suffering from the huge amount of cement dust which was produced from Millers and Kilns. Although electrostatic filters could prevent environmental pollution near these factories, a huge amount of cement dust is produced inside it, about 15-20% by weight of daily production. This means economical loss and a kind of burden on environment.

In this research: a trial of reusing this cement dust by adding it to concrete mixtures in the ratios of standard Methods were followed (0-5-10-15-20)% to prepare mixtures. Standard compression cubes are prepared to be broken after 28 and 56 days to study the effect of these additions on the compressive resistance of the produced concrete by using two kinds of cement, the Syrian cement (32.5) and the Lebanese Cement (42.5). Results showed that the compressive resistance of concrete wasn't negatively affected by adding cement dust up to (15%) but increased slightly, especially the late resistance of 56 days samples. Because of the active silisium, that helps to confirm C₂S (Bellit) which increases the late resistance of concrete by reacting with Calcium Hydroxide (CaO).

The Outcome of this study recommends the addition of (15%) of cement dust to the cement without adverse effect on the compressive resistance of concrete, which means desirable economical and environmental profits.

Keywords: Cement, Cement Chemistry, Clinker, Cement Dust, Concrete, Compressive resistance.

For the abstract in Arabic see pages (75-84).

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