

A review: Utilization of waste materials in concrete

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ABSTRACT

Concrete is the most important material in building construction. It has been used widely around the world and is made of cement, fine aggregates, coarse aggregates and water. These materials come from natural resources which had a depletion and environmental pollution issues. On the other hand, tonnes of waste are generated around the world especially in developed country which are having rapid industrialization, increasing population growth, technological developments and urbanization. Most of the waste materials from those causes are not recyclable. The methods managing of the waste materials are usually done by dumping in landfills or burning. Thus, in order to overcome both issues, alternative replacements from waste materials can massively give huge differences to the industry that will reduce the usage of natural resources and gives benefits to the industry itself and also to the environment. Studies on waste materials had been conducted by many researchers before. Hence, in this paper, some materials which are coal bottom ash, slag, ceramic waste and glass powder will be discuss as waste materials that have been used from many backgrounds of industries. This paper attempt to summarize the investigation of the following materials as substitution materials in concrete, with the following discussion. The properties such as workability, compressive strength, ductility etc. of these replacement materials are compared with the normal concrete. A lightweight concrete that is safe and eco-friendly will be produced as a construction material. This shows that some of the materials can improve the performance of concrete itself. Thus, this study is crucial in finding the other waste materials that can act as a replacement.

KEYWORDS

Ceramic waste; Coal bottom ash; Concrete; Glass powder; Slag; Waste material

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