Review: The fresh and mechanical properties of various types of waste materials as a cement replacement

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Abstract:
Concrete is a material that synonym with strength, durable and longevity. It has emerged as the dominant construction material for the infrastructure needs over 20th century. In being durable, concrete is fabricated and easily prepared from readily available constituents. However, the environmental problem drawbacks the cement production due to an emission of CO2 gasses during the production of cement. As to reduce this greenhouse gasses, nowadays the research regarding the waste material as a cement replacement in concrete mixture had been tremendously increased. Lately, the environmental sustainability became an important problem from the point of view of natural resources and that of wastes. The waste material such as POFA, RHA, bottom ash and slag promising to have better performance compare to the normal Portland cement when incorporate in concrete. The use of waste material is due to the increasing of many of the non-decaying waste materials that will remain in the environment for hundreds, perhaps thousands of years. Most of these materials are left as stockpiles, landfill material or illegally dumped in selected areas. Thus, this research was conducted to review most of the waste materials that had been used as cement in term of physical properties, mechanical properties and the durability performance. This study will contribute in body of knowledge of the waste materials properties in concrete as well as the current research on waste materials.

Keywords : Waste Material; Cement; Sustainability

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