



## The Effects of Sugar Waste on Cement Concrete

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**Abstract:-** The utilization of industrial and agricultural waste produced by industrial processes has been the focus of waste reduction research for economical, environmental, and technical reasons. Sugar-cane bagasse is a fibrous waste- product of the sugar refining industry, along with ethanol vapor. This waste product (Sugar-cane Bagasse ash) is already causing serious environmental pollution, which calls for urgent ways of handling the waste. Bagasse ash mainly contains aluminum ion and silica. In this paper, Bagasse ash has been chemically and physically characterized, and partially replaced in the ratio of 0%, 5%, 15% and 25% by weight of cement in concrete. Fresh concrete tests like compaction factor test and slump cone test were undertaken as well as hardened concrete tests like compressive strength, split tensile strength, flexural strength and modulus of elasticity at the age of seven and 28 days was obtained. The result shows that the strength of concrete increased as percentage of bagasse ash replacement increased.



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**Keywords** – bagasse ash, concrete, Fibrous waste product.

**Introduction :** Ordinary Portland cement is recognized as a major construction material throughout the world. Portland cement is the conventional building material that actually is responsible for about 5% - 8% of global CO<sub>2</sub> emissions. This environmental problem will most likely be increased due to exponential demand of Portland cement. Researchers all over the world today are focusing on ways of utilizing either industrial or agricultural waste, as a source of raw materials for industry. This waste, utilization would not only be economical, but may also result in foreign exchange earnings and environmental pollution control. Several researchers and even the Portland cement industry are investigating alternatives to produce green building materials. Industrial wastes, such as blast furnace slag, Currently, there has been an attempt to utilize the large amount of bagasse ash, the residue from an in- line sugar industry and the bagasse-biomass fuel in electric generation industry. When this waste is burned under controlled conditions, it also gives ash having amorphous silica, which has pozzolanic properties. A few studies have been carried out on the ashes obtained directly from the industries to study pozzolanic activity and their suitability as binders, partially replacing cement.

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