

Enhancing the Mechanical Properties of Green Concrete Blocks Mixture

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Abstract. Concrete is a very abundant building material and flexible in construction. Yet cement is the main material used in concrete mixture, which consumed a lot of energy and money. Cement is a very un-eco-friendly material when it comes to production and is a main contributor to global warming. On the other hand, Polymers can be toxic to people, fauna, and flora. In the last century, Egyptian citizens complained that the waste has increased, and the inappropriate waste disposal effect the Egyptian health and quality of life. The alternative is to burn the polymers; however, it will produce toxic emissions that will break down the ozone layer. Previous researchers tried to replace cement with an alternative in the concrete mixture. Therefore, this research intends to create a green concrete block with cement-less mixture and use polymers as a binding material in the blocks. This research will follow the experimental method after discussing the properties of the materials. Then a concrete mix will be created, and a percentage of cement will be replaced; thus, making a cheap concrete mixture that has less cement and is more ecological and economical. Tests will be performed to determine if the proposed concrete mixture is suitable for mass production and doesn't violate the international standards. The performed tests will include compressive strength, tensile strength, and abrasion. finally, a cost analysis will be calculated to compare the construction costs before and after using the proposed concrete mixture.

