

Durability study of fly ash and eggshells powder to replace the cement on concrete productions

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Abstract:

Carbon emissions became one of the most significant issues that affect the environment status on direct way, this lead to climate change and other environment problems. Cement factories are producing a high ratio of Co₂ emission as an outcome process in the atmosphere which is around 5-7% in total of Co₂ emission in the earth. This paper will investigate the possibility of reducing the cement amount in concrete productions by replacing it with waste materials in the mixing design to achieve a high quality concrete same as normal concrete that use ordinary cement. Fly ash (FA) and eggshells powder (ESP) are the elements that used for this research. Compression test has been done based on different percentage (35% to 45%) of the mixture of FA and ESP in the mixing design. as the mixing design as the replacement for the cement. The mixture of the replacement will be measure in weight instead of volumes. Results showed that 35% as a maximum amount of fly ash and eggshells in mixing will keep the durability of concrete as normal. In conclusion, replacing 35% in total (FA+ESP) instate of cement is an acceptable amount that can reduce the use of ordinary cement in construction applications. As a result, carbons emissions will decrease accordingly as well as the cost of concrete industry.