**Partial Replacement of Cement by Ground Granulated Blast furnace Slag**

**In Concrete**

# Abstract

The increased quest for sustainable and eco-friendly materials in the construction industry has led to research on partial replacement of the conventional constituents of concrete by two selected waste materials. The broad aim of this work was to investigate the effects of partially replaced Ordinary Portland Cement (OPC) by ground granulated blast furnace slag (GGBS) on the properties of concrete including compressive strength, tensile splitting strength, flexure, modulus of elasticity, drying shrinkage and initial surface absorption. Results showed that the compressive and tensile splitting strengths, flexure and modulus of elastic increased as the GGBS content increased. The percentage drying shrinkage showed a slight increment with the partial replacement of OPC with GGBS. However, concrete containing GGBS failed the initial surface absorption test confirming that GGBS decreases the permeability of concrete. The optimum mix was the one with 50% GGBS replacement. Thus, GGBS can potentially be used as a cement replacement material for structural concrete applications in line with the sustainability targets of Mauritius.

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**Keywords:** OPC, aggregates, GGBS workability, compressive and tensile splitting strengths