

# **The behavior of eco-friendly self – compacting concrete partially utilized ultra-fine eggshell powder waste**

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## **Abstract**

To address the issues on environmental eco-cement mortar due to cement production, we explored the strength properties of glass powder (GP) mortar and its sulphate resistance. A total of 60 cement mortar mixtures were proportioned in this research for two series, as follows: series I used GP with the passing sieve size of 200 mm, and series II used GP with the passing sieve size of 400 mm. The 5%, 10% and 20% MgSO<sub>4</sub> solution concentrations and 3 different exposure periods, that is 10, 30 and 60 days, were used. Results indicated that replacing GP in the control mixture increased the unit weight by 29% on the 60th day. However, low unit weight showed high GP of up to 20%, but 20% GP replacement with cement improved the mortar to the control mix on the 28th day. A 10% replacement with GP enhanced the sulphate resistance compared with control mixes