

# Performance of self-compacting concrete containing nano clay at elevated temperatures and MgSO<sub>4</sub> attack

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## **Abstract**

Due to increasing urbanisation, the volume of cement production and construction waste is increasing and poses a hazard to the environment. As a result, it is important to replace completely or partly of cement with an alternative material to achieve a sustainable environment. In recent years, researchers have been drawn attention to produce self compacting concrete due to its uniqueness in self weight and becoming compacted efficiently with no segregation and bleeding. In this study, the fresh and durability properties of self-compacting concrete were studied. The chemical setting of MgSO<sub>4</sub> solution with three different concentrations (5, 10, and 20%) at variance periods (30, 60 and 90 days) were exposed to elevated temperatures (200 °C, 400 °C, 600 °C, and 800 °C) for 3 h at ages 56, 90, and 120 days. The reduction in compressive strength, mass, and UPV was measured. It was found that the NC incorporating SCC specimens have higher durability properties than reference SCC. At the same time, the lower weight percentages of BLP provided insignificant durability properties. Therefore, both mixture material (NC and BLP) can be utilised for producing SCC with good durability.