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**Project Report on**

**“PERFORMANCE STUDY ON COMPRESSED BLOCKS USING  
ALKALI ACTIVATED ALUMINO SILICATE BINDERS”**

**Submitted to**



**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM**

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**By**

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## ***Abstract***

*Ordinary Portland Cement (OPC) has become an important material in the production of concrete/mortar which act as its binder to bind all the constituents together. However, the utilization of cement causes pollution to the environment and depletion of raw material (limestone). The manufacturing of OPC requires the burning of large quantities of fuel and decomposition of limestone, resulting in significant emissions of carbon dioxide. The production of one ton of cement emits approximately one ton of carbon dioxide to the atmosphere. This research envisages that geopolymer technology will be able to support the efforts necessary for the development of concrete materials without using cement. This paper presents the engineering properties of geopolymer compressed block/bricks manufactured using industrial byproducts such as fly ash and ggbs as binder, activated by sodium based alkaline reactor without any use of cement. Tests are carried out on 225x100x75mm geopolymer blocks to study their performance. The results revealed that as content of ggbs as well as molarity of sodium hydroxide solution are increased, the compressive strength of geopolymer block increases. This study also includes behaviour of geopolymer blocks exposed to elevated temperature up to 800°C. Tests are conducted to study amount of water absorption, unit weight and masonry efficiency of prisms for different height to thickness ratio. Efforts are made to evaluate the stress-strain behavior and young's modulus of wall prisms using compressed blocks.*