

**STRENGTH BEHAVIOUR OF CONCRETE MADE WITH
TITANIUM DIOXIDE AS A PARTIAL CEMENT REPLACEMENT**

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ABSTRACT

STRENGTH BEHAVIOUR OF CONCRETE MADE WITH TITANIUM DIOXIDE (TiO₂) AS A PARTIAL CEMENT REPLACEMENT

This research work is done to find out the effect of Titanium Dioxide (TiO₂) on the compressive strength. Titanium Dioxide is a very small sized material with a nanometres (nm) particle size. These materials are very efficient in altering the properties of concrete at the ultrafine level because of their small size by filling up the air voids and pores in the microstructure. For the experimental study M25 grade of concrete is casted and cement is partially replaced by Titanium Dioxide (by weight) in the proportions of 0.5%, 1.0%, 1.5%, 2.0%, 2.5%, 3.0% and 3.5%. In this study we use Titanium Dioxide (rutile based TiO₂) of size 1000nm to 2000nm to improve the compressive strength of the concrete. The cubes specimens with dimension 100mm x 100mm x 100mm is casted and tested after 7 and 28 days of curing. The maximum compressive strength is obtained for 1.0% of Titanium Dioxide (TiO₂) with 70mm height of slump with partial replacement of cement. To achieve the desired result, only the small percentage of cement value can be replaced.