

IMPROVING THERMAL BEHAVIOR OF CONCRETE USING PHASE CHANGE MATERIAL AND STRENGTHENING BY BASALT FIBER

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Materials that are capable of storing and releasing large amounts of energy in the form of heat during its melting and solidifying processes at the specific transition temperature are known as Phase change materials (PCM). PCM in concrete has been proved that it has superior thermal properties compared to conventional concrete. PCM has the property in improving the thermal behavior but PCM decreases the compressive strength of the concrete, to increase the strength of the concrete we are adding basalt fiber in various proportions. Mix design for M25 grade of concrete has been carried out. Basalt fiber was later added in the concrete mix proportional to the concrete to the total volume of the cube.

The casting of samples was done and the testing of all the samples have been carried out. Slump flow test with PCM proportions was carried out for the fresh concrete. The compressive strength and thermal conductivity test for the samples have been found out by testing. Finally, the best proportions have been suggested to improve the strength properties and thermal behavior of both basalt fiber and PCM in concrete. Paraffin wax of organic type is the PCM used in this project and Conplast sp 430 is the plasticizer used.