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Study on Drying Shrinkage of Copper Slag and Its Mechanism.

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ABSTRACT:

This project reports on drying shrinkage of concrete an experimental program to investigate the effect copper slag and polypropylene fibre. Copper slag is used as material for replacement of fine aggregate in concrete and polypropylene used an additive in the concrete. In this work, concrete grade M30 was used and IS method was used for mix design. The properties of material for cement, fine aggregates, coarse aggregates and copper slag were obtained by material testing and mix design. The drying shrinkage was studied for various replacements of fine aggregate by copper slag in proportions of 0%, 10%, 20%, 30%, 40%, 50%, 60% and 100%. The polypropylene fiber was varied from 0.1%, 0.2%, 0.3%, and 0.4% by weight of concrete. The test was carried out to obtain a characteristic strength of 30N/mm². Tests were performed for shrinkage which was determined at 7, 14 days and 28 days. As the age of concrete increased the shrinkage increased. Also with increase in copper slag content the drying shrinkage increased. The maximum compressive strength of concrete was attained 40% replacement of fine aggregates at 7 and 28 days. When 0.2% of polypropylene was added maximum compressive strength was obtained.

Key words: Polypropylene, Copper Slag, Shrinkage.



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