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Effect of waste aluminium shavings on the bond characteristics of laterized concrete

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Abstract

The utilization of fibre in concrete production not only solves the problem of disposing this solid waste but helps conserve natural resources. This study investigated the effect of waste aluminum shavings on bond strength of laterized concrete. Laterized concrete spliced beams of 150×250×2150mm150×250×2150mm and 175×275×2300mm175×275×2300mm were prepared. Fifteen specimens with 16 mm and 20 mm were cast with the addition of aluminium shavings at varying percentages of 1vol%, 1.5vol% and 2vol%; another ten specimens with 16 mm and 20 mm diameter bars at 0% of aluminium shavings were cast as control. Concrete cubes of number were prepared, three taken for each set of various percentages of aluminium shavings were used to determine the concrete strength. It was observed from the analysis that the compressive strength decreased as the percentage of aluminium shavings increased, while the aluminium shavings increased the bond between concrete and steel. However, for normal concrete there was an increase in bond resistance with increase in aluminium shavings. The bond resistance of 16 mm was found to be higher than that of 20 mm in all the specimens tested.

Keywords

- aluminum shavings;

spliced beams;

- laterized concrete beams;

- reinforcing bar;

- bending;

- splice length

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