

EFFECT OF BORON CARBIDE ADDITION ON THE STRENGTH AND PHYSICAL PROPERTIES OF CONCRETE

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ABSTRACT

Concrete currently has become a conventional material in construction of nuclear reactor due to its properties such as safety, strength and economical in cost. Boron carbide (B₄C) was used as additives in concrete are characterized as a good neutron absorber for nuclear reactor applications. The effect of B₄C addition on physical and strength properties of concrete samples were investigated. The samples were prepared with three different weight percent (wt%) of B₄C powder. The concrete slump test of fresh concrete has been done to investigate the workability of mixtures. Free B₄C mixture shows the highest workability compare to 5 and 20 wt% B₄C concrete mixture. The density of 0 wt% of B₄C is the lowest compared to 5 and 20 wt%. However, after 28 days curing time, the compressive strength test of 20 wt% B₄C shows the highest value compare to 5 and 0 wt% B₄C concrete respectively. It is obvious that up to 20 wt% B₄C can be added to concrete mixture and cause significant strength increased.

Keywords: strength; boron carbide; concrete; radiation shielding;

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