

# **STRENGTH, LOAD-DEFLECTION BEHAVIOR AND IMPACT RESISTANCE OF TWO-WAY SLAB FOR CONCRETE INCORPORATING WASTE ALUMINUM FIBERS**

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**ABSTRACT** This research investigated about the effectiveness of waste aluminum results from waste cans of gassy drink, as fibers in concrete. strengths, load-deflection behavior under flexural load and impact resistance under low velocity repeated impact load were investigated. Two length of fibers were examined 40 mm and 20 mm for 0%, 0.5%, 0.75% and 1% fibers content. Results showed that compressive strength has inconsiderable affected by adding fibers while splitting tensile strength, modulus of rupture and impact resistance for concrete incorporating aluminum fibers especially for 0.75% and 4-mm fibers have clear improvement. Compared to experimental results, ACI equation underestimated the tensile strength of fiber concrete. Load –deflection of beam with fibers showed a more ductile behavior at failure under flexural load compared to reference one. Bond strength improved by adding aluminum fibers. Slabs that incorporating aluminum fibers showed a higher energy absorbed, less deflection and smaller cracks width at failure than the one without fibers under impact loads. From results, one can see that mixes with 0.75% fibers showed a best performance compared with other mixes. Finally, the 40 mm fiber was more effective in improvement in concrete resistance than 20 mm fiber length.