

## THE CHARACTERISTIC OF ULTRASONIC PULSE VELOCITY (UPV) ON MORTAR WITH POLYPROPYLENE FIBERS AS ADDITIVES

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**Abstract:** Nowadays, Non Destructive Tests have been applied in many quality evaluations of existing concrete structures. One of the Non Destructive Tests (NDT) is based on Ultrasonic Pulse Velocity (UPV). This research used 24 cylinder test samples in four groups, which were reference cylinder (SR), cylinder-1 (S-01) with  $0.5 \text{ kg/m}^3$  of fibers, cylinder-2 (S-02) with  $1.0 \text{ kg/m}^3$  of fibers and cylinder-3 (S-03) with  $1.5 \text{ kg/m}^3$  of fibers. This research dealt with three tests (compressive strength, splitting test, and UPV test). The Ultrasonic Pulse Velocity (UPV) test was conducted with direct test method. The test result showed that the addition of polypropylene fibers could not increase the compressive and tensile strengths. The decrease of compressive with fibers of  $0.5 \text{ kg/m}^3$ ,  $1.0 \text{ kg/m}^3$  and  $1.5 \text{ kg/m}^3$  in comparison to reference cylinder were of 16.58%, 1.68% and 23.78% respectively. On the other hand, the decreases of tensile strength were of 16.42%, 8.86% and 29.98% respectively. The statistical test indicated that the significance value (2-tailed test) on pair of S-01, S-02 and S-03 were of 0.052, 0.037 and 0.056 respectively and those values were  $> 0.025$  (2,5%). This means that the decrease of the pulse velocity wave was due to insulator effect of the polypropylene.

**Keyword:** UPV, Compressive and splitting test, Polypropylene fibers.