

## Behaviour of Polypropylene Fiber Reinforced Concrete under Dynamic Impact Loads

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**Abstract :** A study of the used of additives which mixed with concrete in order to increase the strength and durability of concrete was examined to improve the quality of many aspects in the concrete. This paper presents a polypropylene (PP) fibre was added into concrete to study the dynamic response under impact load. References related to dynamic impact test for sample polypropylene fibre reinforced concrete (PPFRC) is very limited and there is no specific research and information related to this research. Therefore, the study on the dynamic impact of PPFRC using a Split Hopkinson Pressure Bar (SHPB) was done in this study. Provided samples for this study was composed of 1.0 kg/m<sup>3</sup> PP fibres, 2.0 kg/m<sup>3</sup> PP fibres and plain concrete as a control samples. This PP fibre contains twisted bundle non-fibrillating monofilament and fibrillating network fibres. Samples were prepared by cylindrical mould with three samples of each mix proportion, 28 days curing period and concrete grade 35 Mpa. These samples are then tested for dynamic impact by SHPB at 2 Mpa pressure under the strain rate of 10 s<sup>-1</sup>. Dynamic compressive strength results showed an increase of SC1 and SC2 samples than the control sample which is 13.22 % and 76.9 % respectively with the dynamic compressive strength of 74.5 MPa and 116.4 MPa compared to 65.8 MPa. Dynamic increased factor (DIF) shows that, sample SC2 gives higher value with 4.15 than others samples SC1 and SC3 that gives the value of 2.14 and 1.97 respectively.

**Keywords :** polypropylene fiber, Split Hopkinson Pressure Bar, impact load, dynamic compressive strength

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