

Behavior of Fibre Reinforced Polymer Composite with Nano-Ceramic Particle under Ballistic Impact and Quasi-Static Punch-Shear Loading

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Abstract : The performance of Fibre Reinforced Polymer composite with the nano-ceramic particle as function of time and thickness of laminate which is subjected to ballistic impact and quasi-static punch-shear loading is investigated. The material investigated is made up of several layers of Kevlar fibres which are fabricated with nano-ceramic particles and epoxy resin by compression moulding. The ballistic impact and quasi-static punch-shear loading are studied experimentally and numerically. The failure mechanism is observed using scanning electron microscope (SEM). The result obtained in the experiment and numerical studies are compared. Due to nano size of the ceramic particle, the strength to weight ratio and penetrating resistance will improve in Fibre Reinforced Polymer composite which will have better impact property compared to ceramic plates.

Keywords : ballistic impact, Kevlar, nano ceramic, penetration, polymer composite, shear plug

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020