

Experimental and numerical simulation of energy absorption on composite Kevlar29/Polyester under high velocity impact.

ABSTRACT

This paper presents the results of the energy absorbed due to impact of 7.62mm steel bullet on composite materials targets. The energy absorbed due to impact of conical nose projectiles on composite Kevlar-29/Polyester laminates are investigated experimentally. The impact on Kevlar 29/Polyester thin plate laminated has been subjected to a high velocity range of 160-400m/s. The results obtained via simulation by ANSYS AUTODYN 3D-v.12.1 Software programs were compared with the experimental work for different thickness of specimens. The results shown in this work are in terms of varying plate thickness and the amount of energy absorbed by the laminated plates meanwhile we obtained that the 20mm thickness of composite plate suitable for impact loading up to 320m/s impact velocity. The results obtained the maximum error observed and computed values on the ballistic limit were 3.6 % so, these results were reasonably well with the experimental result.

Keyword: Composite; Kevlar; High velocity impact.