Accepted Manuscript

Impact behaviour of FRP composite plate under low to hyper velocity impact

Md. Muslim Ansari, Anupam Chakrabarti

PII: \$1359-8368(16)30262-1

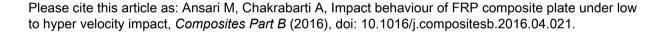
DOI: 10.1016/j.compositesb.2016.04.021

Reference: JCOMB 4219

To appear in: Composites Part B

Received Date: 16 September 2015 Revised Date: 18 November 2015

Accepted Date: 5 April 2016



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

Impact behaviour of FRP composite plate under low to hyper
velocity impact
Md. Muslim Ansari ^{1,*} , Anupam Chakrabarti ²
¹ Department of Civil Engineering, Indian Institute of Technology Roorkee, INDIA, 247667
* Corresponding Author; Tel: No. +91 9997365104
muslimdecivil@gmail.com
² Department of Civil Engineering, Indian Institute of Technology Roorkee, INDIA, 247667
achakfce@iitr.ac.in
Abstract
This paper presents a numerical investigation of penetration and perforation behavior of FRP
composite plate under impact. The reported numerical investigation is carried out using
AUTODYN hydro code in which the shock effect due to impact has also been incorporated in
the modeling. Here the study has been focused on the progressive damage behaviour and
modes of damage evolution in laminated FRP composites under impact. The variation of
ballistic limit, residual velocities, damage pattern in the target as well as in the bullet, depth
of penetration, contact force, deflection and radius of damaged area are also studied. The
effects of boundary conditions, thickness to span ratio, span of target plate and thickness of
lamina on ballistic limit, residual velocity and damage pattern have been presented in this
paper. The present numerical results are compared with the results available in the literatures
showing close agreements. Many new results are generated to highlight the three dimensional
progressive damage patterns and perforation behavior of laminated composite plates under
impact.
Keywords
FRP composite, Impact load, Finite element model, Damage modes, Boundary conditions

Download English Version:

https://daneshyari.com/en/article/7212714

Download Persian Version:

https://daneshyari.com/article/7212714

Daneshyari.com