Accepted Manuscript

Experimental and simulation studies on delamination strength of laminated glass composites having Polyvinyl butyral and Ethyl vinyl acetate inter-layers of different critical thicknesses

Ajitanshu Vedrtnam

PII: S2214-9147(17)30248-9

DOI: 10.1016/j.dt.2018.02.002

Reference: DT 291

To appear in: *Defence Technology*

Received Date: 19 December 2017

Revised Date: 24 January 2018

Accepted Date: 6 February 2018

Please cite this article as: Vedrtnam A, Experimental and simulation studies on delamination strength of laminated glass composites having Polyvinyl butyral and Ethyl vinyl acetate inter-layers of different critical thicknesses, *Defence Technology* (2018), doi: 10.1016/j.dt.2018.02.002.

Experimental and simulation studies on delamination strength of Laminated Glasscompositeshaving Polyvinyl Butyral and Ethyl Vinyl Acetate Inter-layers of Different Critical Thicknesses

Ajitanshu Vedrtnam[1,2]

[1]Department of Applied Mechanics, Motilal Nehru National Institute of Technology Allahabad, Allahabad, UP, India-211004.

[2]Department of Mechanical Engineering, Invertis University, Bareilly,UP, India-243001.

ajitanshu.m@invertis.org (corresponding author)

Abstract

The laminated glasses(LGs)composites are gaining popularity as protectivestructural material. Delamination strength (DS) of (LGs) with different inter-layers and their different nominal thicknesses were compared. The effect of inter-layer thickness, delamination load, and inter-layer type on DS is clearly observed from this brief study. It is concluded that inter-layer thickness has the significant role in determining the DS of LGs. The statistical analysis confirmed the strong association of DS with inter-layer thickness and the interlayer type. It was found that the LG-PVB compositehas the comparatively lower DS than LG-EVA compositeand inter-layer thickness has the prominent role in the determination of DS in the LG-EVAcomposite. There is an increment in DS with an increment in critical inter-layer thickness in both LG-EVA and LG-PVBcomposites. The increment in the inter-layer thickness from 0.38 mm to 0.76 mm increases DS significantly; whereas, the further increment in the inter-layer thickness to the higher value has a lesser effect.The finite element model was constituted (without considering the effect of temperature) for determining DS of LG composite. The simulation results were in a good match with experimental results.Theresults of the present work can be utilized by the design engineers while selecting LG for structural applications.