

# IMPROVED LAMINATED GLASS BLAST DESIGN METHODOLOGY

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## ABSTRACT

Current blast design methods of laminated glass windows do not define the dynamic resistance accurately that is normally used for dynamic response predictions. The classical approach of applying dynamic increase factors to the static resistance does not work for laminated glass (LG). This research focuses on predicting the dynamic properties from the material level to the system level using the high-strain properties of the polymer interlayer and the glass-polymer laminate. The dynamic resistance of the glass laminate through all stages of the response under dynamic pressure is developed. This includes the initial resistance controlled mainly by the glass panes through the membrane resistance controlled by the un-cracked and cracked glass-polymer laminate. The failure limits are also predicted in this research using a water chamber testing to apply static uniform pressure on the LG panes. The results can be used to improve the existing SDOF models currently used for the engineering analysis and design methodology for laminated glass under blast. The results of the analytical and experimental program along with the developed resistance function of LG panes are summarized in this paper.