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Determination of LS-DYNA MAT162 Material input Parameters for Low Velocity Impact Analysis of Layered Composites

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Abstract : In this study, the necessary material parameters were determined to be able to conduct progressive damage analysis of layered composites under low velocity impact by using the MAT162 material module in the LS-DYNA program. The material module MAT162 based on Hashin failure criterion requires 34 parameters in total. Some of these parameters were obtained directly as a result of dynamic and quasi-static mechanical tests, and the remaining part was calibrated and determined by comparing numerical and experimental results. Woven glass/epoxy was used as the composite material and it was produced by vacuum infusion method. In the numerical model, composites are modeled as three-dimensional and layered. As a result, the acquisition of MAT162 material module parameters, which will enable progressive damage analysis, is given in detail and step by step, and the selection methods of the parameters are explained. Numerical data consistent with the experimental results are given in graphics.

Keywords : Composite Impact,Finite Element Simulation,Progressive Damage Analyze,LS-DYNA,MAT162
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