

Study on manufacturing technology and mechanical properties of porous material

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ABSTRACT

This paper discussed the parameters of twice foaming processes for the composite sandwich structures. The presented manufacturing processes not only combined the features of traditional pressure bag molding and sandwich construction molding, but also improved the processing defects in irregular shaped molds. During the curing process, prepregs were compressed by internal pressure of foaming-core. In the study, foaming processes were discussed in three aspects. The one was lots of foaming experiments were be done, such as gas yield, and decomposition temperature of chemical foaming agent (CFA). The fitness of the foam material properties were been evaluate by the above experiments. The second one, the processes testing were going to discuss the relationship between CFA dosage, curing time, pressure and temperature by measured foaming pressure with different dosage of CFA. And the other one, effective stiffness of cellular structures were measured and simulation with computer-aided engineering (CAE) software ANSYS.

Due to the limitation of lightweight, the dose adjustment was an effective way to enhance foaming pressure. However, excessive of CFA were caused the cell structure to collapse, and affected the forming of composites.

Keywords : foam、cellular structure、composite、sandwich structure

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