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Simulation of the development of local panel distortions due to hot-curing adhesives

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Abstract

A model was developed and applied to describe the development of local panel distortions caused by hot-curing adhesives. The cure evolution, volume changes and evolving mechanical properties of a commercial hot-curing epoxy system were integrated into the simulation model; material parameters were determined experimentally. Predictions of distortions for different temperature cycles were compared with experimental data. The model predicts well the deformations that occur over an entire cure cycle including the heating and isothermal phase.

Keywords: Adhesive bonding, cure, chemical shrinkage, bond-line read-through

1. Introduction

Adhesive bonding is known to offer certain advantages over other joining techniques: Barnes and Pashby (2000) name the ability to join dissimilar

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