

DAMPING RATIO MEASUREMENTS IN KEVLAR SANDWICH SAMPLES

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ABSTRACT

Unlike some structural aerospace materials, as for instance carbon fibers, Kevlar composites present high damping ratios. This characteristic seems important in the structural design of satellites and large spacecraft. Besides the use of Kevlar sandwich structures is particularly interesting because of their high specific stiffness.

This paper presents the experimental results of damping ratio measurements derived from several sandwich samples, characterized by different skins, fabric and laminate with different lay-up.

Damping ratios are evaluated by using different techniques and a comparison is discussed. The effects of frequency and temperature - in the range from the room value up to 100 Centigrade - on the damping ratio values are also considered.

A model (based on an energetic approach), that permits a theoretical estimate of the damping ratio in sandwich samples is presented. Finally a comparison between the experimental and the predicted values is carried out.

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