

## Accepted Manuscript

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PII: S0263-8223(17)30358-6  
DOI: <http://dx.doi.org/10.1016/j.compstruct.2017.03.059>  
Reference: COST 8380

To appear in: *Composite Structures*

Received Date: 31 January 2017

Revised Date: 15 March 2017

Accepted Date: 16 March 2017



Please cite this article as: Yurddaskal, M., Ozmen, U., Kir, M., Baba, B.O., The Effect of Foam Properties on Vibration Response of Curved Sandwich Composite Panels, *Composite Structures* (2017), doi: <http://dx.doi.org/10.1016/j.compstruct.2017.03.059>

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## The Effect of Foam Properties on Vibration Response of Curved Sandwich Composite Panels

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### Abstract

In this study, a numerical and experimental study was carried out to determine the effects of variables such as curvature and foam properties on the natural frequencies of the sandwich panels. Sandwich panels consist of laminated E/glass epoxy face sheets with  $[0^\circ/90^\circ/-45^\circ/+45^\circ]$  stacking sequences and PVC foam cores with AIREX C70.55, C70.90, C70.200 and C70.250. A group of sandwich panels with radii of curvature ranging from 90 to 200 mm were analysed by ANSYS software. Vibration characteristics were obtained for clamped square sandwich panels. The results indicate that the natural frequencies increase with the increasing curvature and foam density. However, the increment in the natural frequency due to an increase in the magnitude of curvature decreases with increasing foam density. The highest increase in natural frequency due to increasing foam properties is seen in the flat panels. Also, it is found that in values beyond a specific curvature; increasing of the foam properties causes reduction in the natural frequencies.

**Key Words:** Sandwich composite, free vibration response, foam core, curvature

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