THERMAL SCIENCE
International Scientific Journal

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MOISTURE INTRUSION IN VISCOELASTIC POROUS MEDIA: INDUCED-STRESS AND DEFORMATION

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ABSTRACT

Porous media exposed to humid air absorb moisture which can lead to extensive internal damage and failure. In this paper, we analyze numerically the influence of the moisture intrusion in a two-layer viscoelastic porous media. The relationship between air humidity and moisture content inside the porous media was examined. It was also found that the local stress increases with the exposure time to humid air but decreases with initial moisture content of the porous medium. Furthermore, the stress components were tensile at the centre of the medium and compressive near the medium surface. The ultimate strength of the medium was only exceeded for the stresses in axial and tangential directions.

KEYWORDS

moisture intrusion, moisture content, stress, failure, porous media

PAPER SUBMITTED: 2007-11-27

PAPER REVISED: 2008-07-15

PAPER ACCEPTED: 2008-12-08

DOI REFERENCE: TSCI0901047M

CITATION EXPORT: view in browser or download as text file

THERMAL SCIENCE YEAR 2009, VOLUME 13, ISSUE 1, PAGES [47 - 54]

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