Estimation of fracture parameters in foam core materials using thermal techniques

The paper presents some initial work on establishing the stress state at a crack tip in PVC foam material using a non-contact infra-red technique known as thermoelastic stress analysis (TSA). A parametric study of the factors that may affect the thermoelastic response of the foam material is described. A mode I simulated crack in the form of a machined notch is used to establish the feasibility of the TSA approach to derive stress intensity factors for the foam material. The overall goal is to demonstrate that thermal techniques have the ability to provide deeper insight into the behaviour of the cracks in foam and the potential to determine stress intensity factors.

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