

## Thermal Fracture Analysis of Fibrous Composites with Variable Fiber Spacing Using Jk-Integral

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**Abstract :** In this study, fracture analysis of a fibrous composite laminate with variable fiber spacing is carried out using Jk-integral method. The laminate is assumed to be under thermal loading. Jk-integral is formulated by using the constitutive relations of plane orthotropic thermoelasticity. Developed domain independent form of the Jk-integral is then integrated into the general purpose finite element analysis software ANSYS. Numerical results are generated so as to assess the influence of variable fiber spacing on mode I and II stress intensity factors, energy release rate, and T-stress. For verification, some of the results are compared to those obtained using displacement correlation technique (DCT).

**Keywords :** Jk-integral, Variable Fiber Spacing, Thermoelasticity, T-stress, Finite Element Method, Fibrous Composite.

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