

Craze growth mechanics

R. Marissen

Polymer 41, 2000, pp.1119-1129

Abstract

Crazing is an important fracture mechanism in polymers. In this paper, crazes are treated as cracks bridged by fibrils. Fibril stresses are treated as external loads on the crack flanks. This perception of a craze allows an analysis in terms of linear elastic fracture mechanics. A “Paris law” type of crack growth behaviour is adopted and the two constants for the Paris equation are estimated. The results of the approach explain experimental results from the literature, including the well-known empirical logarithmic craze growth equation. The model prediction compares favourably with craze growth data, obtained by Wales on PVC.

Link to download paper: <http://www.sciencedirect.com/science/article/pii/S0032386199002347>