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Stress analysis and failure characterizations of V-shaped epoxy adhesively bonded joint

Abstract

This paper deals with stress and failure characteristics of V-shaped epoxy adhesive joint. Effect of scarf angle upon failure morphology was investigated by tensile test and monitoring using high speed camera.V-shaped specimens were fabricated having bond thicknesses, t = 1.0 mm and various scarf angles (i.e. θ = 30 °, 45 °, 60 °, 75 °, and 90 °). From failure surface observation, failure morphology can be divided into 5 types consisting of interface failure and/or cohesive failure. Stress singularity plays a major role in failure morphology where higher singularity favors cohesive failure in the specimens tested.

Keywords

Adhesive joint; Finite element; Scarf angle; Sus304; V-shaped