

Proposition Model of Micromechanical Damage to Predict Reduction in Stiffness of a Fatigued A-SMC Composite

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Abstract : Sheet molding compounds (SMC) are high strength thermoset moulding materials reinforced with glass treated with thermocompression. SMC composites combine fibreglass resins and polyester/phenolic/vinyl and unsaturated acrylic to produce a high strength moulding compound. These materials are usually formulated to meet the performance requirements of the moulding part. In addition, the vinyl ester resins used in the new advanced SMC systems (A-SMC) have many desirable features, including mechanical properties comparable to epoxy, excellent chemical resistance and tensile resistance, and cost competitiveness. In this paper, a proposed model is used to take into account the Young modulus evolutions of advanced SMC systems (A-SMC) composite under fatigue tests. The proposed model and the used approach are in good agreement with the experimental results.

Keywords : composites SFRC, damage, fatigue, Mori-Tanaka

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