

This paper derives a damage evaluation law for fibres and an expression for the damage parameter function. It also proposes an approach to the matrix damage degradation law. A proposed approach to both the constitutive damage degradation model and increment law is developed to predict intralaminar damage evolution in composite laminates. Failure envelopes for different failure criteria are discussed in term of the fracture plane of matrix cracking under compressive load. The damage surface consistency condition is applied to derive a plastic multiplier as a function of the damage plastic flow so that the plastic strain is updated at each time increment and the stress–strain constitutive relationship of the damage model will also be updated. A user-defined subroutine has been adopted to implement a proposed constitutive damage degradation model. The effectiveness of the proposed method has been examined under low velocity impact. The numerical findings confirm that results obtained using the suggested approach are in good agreement with experimental results.