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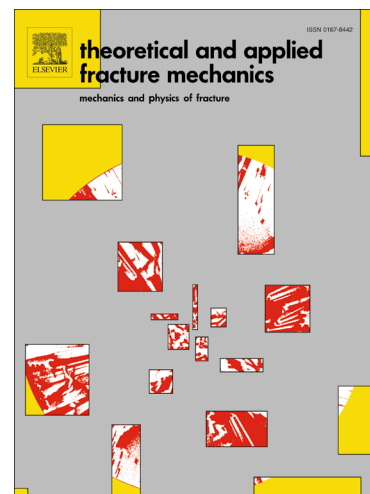
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Title of the paper : Investigation on η and m Factors for J Integral in SE(B) Specimens

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Abstract

The authors have already established a new CTOD calculation formula especially focusing the effect of strain hardening exponent. On the other hand, there is the demand of the conversion to J integral in order to assessment. The relationship between CTOD and J has been discussed for many years. It can be said that ISO 15653 and ASTM E1820 include the latest forms which express that relationship. These conversion equations include some coefficients calculated by numerical analyses where the validation to actual condition around the crack tip may still be insufficient. One problem is the fact that the current relationships include the a_0/W term even in the SSY condition where mechanical field should be independent with the shape of the specimen. In this study, the CTOD- J relationship is redefined by using CTOD calculation results obtained by the authors' previous reports. As a conclusion, except under very small a_0/W conditions, the relationship factor, m is simple, constant and independent of a_0/W , YR and the deformation level. It was also found that same m can be applied with the coefficient for obtaining CTOD from K introduced by the authors. This is convincing considering that the J integral, by definition, corresponds to the energy release rate, G in the SSY condition.

Keywords: CTOD; fracture toughness; J integral; η factor; relationship factor, FEM analysis

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