

# Empirical Estimation of Rock Mass Modulus

by E. Hoek and M.S. Diederichs



In situ jacking test in an exploration adit for the New Tienlun hydroelectric project in Taiwan

## Empirical estimation of rock mass modulus

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Based on an analysis of an extensive data set from China and Taiwan the authors have proposed two new equations for empirical estimates of the deformation modulus of rock masses. These estimates are based on the Geological Strength Index (GSI), the deformation modulus of the intact rock ( $E_i$ ) and the rock mass damage factor (D). The paper includes guidelines on the selection of the damage factor D and for estimating the intact rock modulus  $E_i$  from the intact rock strength for cases where no reliable modulus measurements are available.

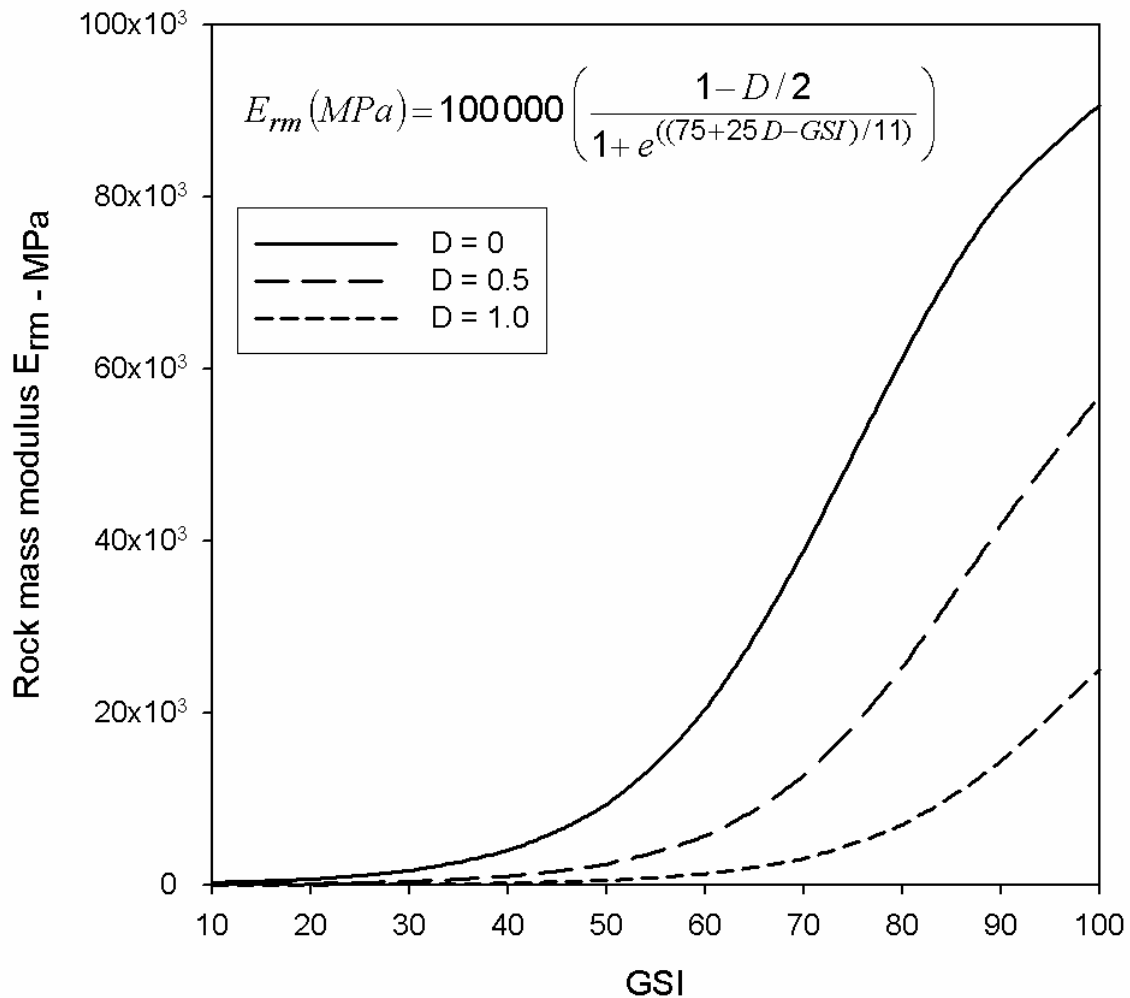


Figure 1: Simplified Hoek-Diederichs equation for empirical estimates of rock mass deformation modulus based on the Geological Strength Index (GSI).

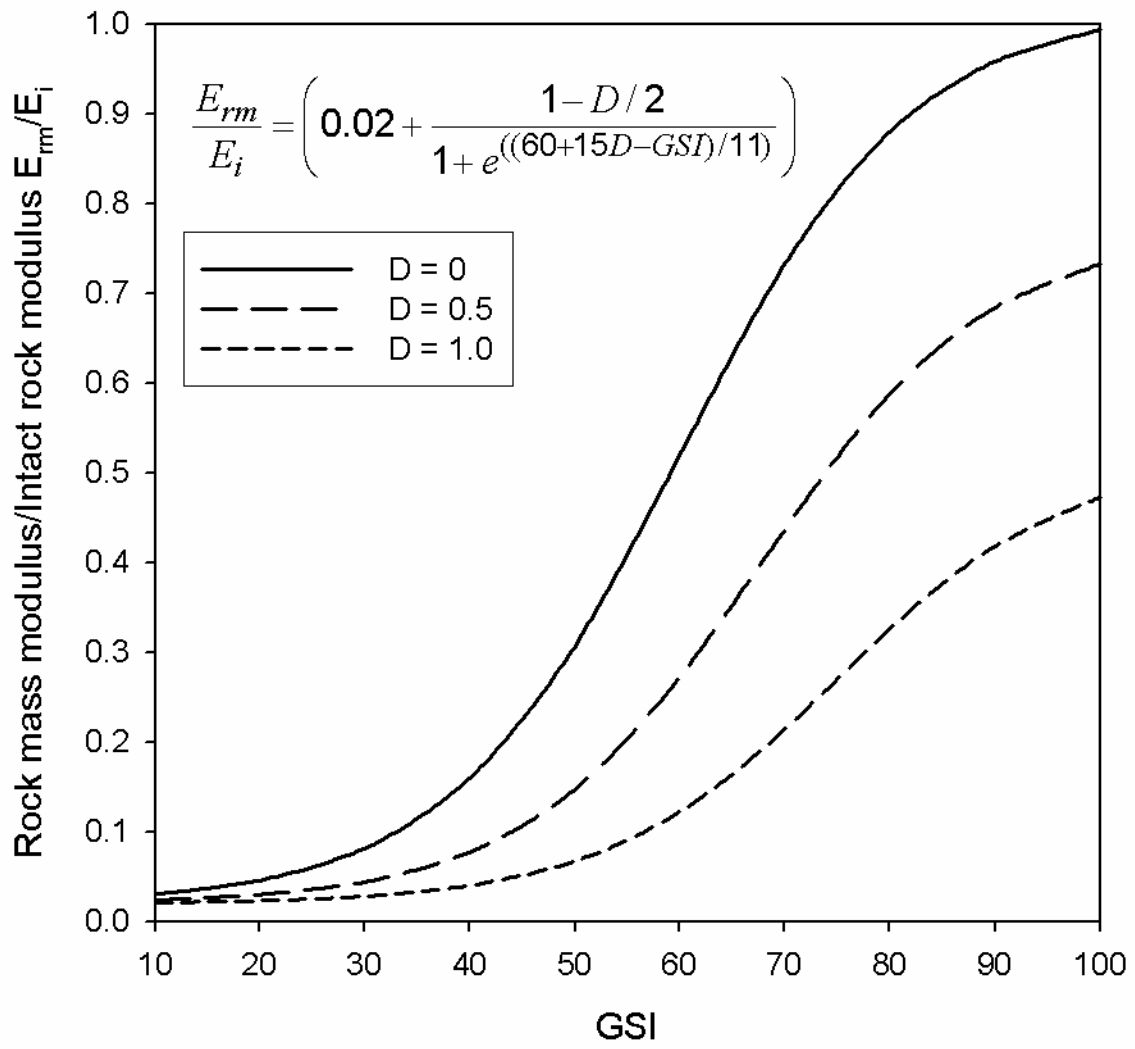


Figure 2: Hoek-Diederichs equation for empirical estimates of rock mass deformation modulus based on the Geological Strength Index (GSI) and intact rock modulus ( $E_i$ ).