USE OF AN INVERSE LIFE PLOT FOR FATIGUE ENDURANCE/LIMIT ESTIMATION

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This paper describes the use of a reverse life plot, S vs. $1/N_f$ for determining a fatigue endurance/limit. The method is applicable for different environments and load R-ratios. Due to inherent scatter in the fatigue data approaching fatigue limit, a 'staircase' method is often utilized but requires relatively large number of individual specimens (around 15-20) to be tested just for fatigue endurance/limit determination alone. The proposed method uses only high-cycle-fatigue (HCF) S-N data. The estimated fatigue endurance/limit is verified against the data from staircase method for 6000 Al alloy and steel. The comparison with the staircase method shows fairly good agreement with an error around of less than 5%. In addition, we show the example on 4140 steek in NaCl And in 90%RH how this method gives reliable endurance limit results.