

Cracking Direction in Multiaxial Low Cycle Fatigue

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Most real structures employed in mechanical components are subjected to multiaxial cyclic loading. Nevertheless the majority of research in the field of fatigue of materials tends to focus on the simpler uniaxial loading case. Here we study the tension-torsion multiaxial fatigue behaviour of different materials with an emphasis on the low cycle fatigue regime.

Results concerning different strain paths are analysed.

Accurate understanding of the cracking direction is essential for predicting low cycle fatigue lives in real engineering components since the orientation can determine whether a particular defect can lead to catastrophic failure or not. A couple of features are discussed regarding the cracking direction under tension-torsion multiaxial low cycle fatigue conditions.

Keywords: low cycle fatigue; cracking direction; multiaxial fatigue; biaxial fatigue;

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