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保证试验对陶瓷试件疲劳强度的影响

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EFFECT OF PROOF TESTING ON FATIGUE STRENGTH OF CERAMICS

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摘要

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摘要 应用断裂力学理论分析了保证试验对陶瓷试件造成的损伤及其对疲劳强度的影响。保证试验后试件的最低强度可根据材料的亚临界裂纹扩展参量、保证应力和保证试验的卸载速率估算。采用惰性试验环境和高的卸载速率可获得较高的试件最低剩余强度值。

关键词: 陶瓷 疲劳 强度 保证试验

Abstract: The effect of proof testing on the fatigue strength of ceramic specimens is analyzed by means of the fracture mechanics approach. It is shown that the damage during proof testing is hard to avoid and the minimum specimen strength after the testing can be assessed by the proof stress, the unloading rate in the proof test and the subcritical crack growth parameters of material in the environment where the test is carried out. Higher minimum strength can be obtained by adopting the inert testing environment and the high unloading rate.

Keywords: ceramics fatigue strength proof-test

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