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论文

裂隙充填对岩体单轴压缩力学性能及锚固效应的影响

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摘要：

用相似材料试件研究了裂隙不同充填物对节理岩体单轴压缩力学性能及锚固效应的影响。对裂隙含不同充填物节理岩体相似材料无锚及有锚试件进行了单轴压缩试验及数值研究，分析了不同充填物对节理岩体单轴压缩力学性能及锚固效应的影响。研究得到：充填物弹性模量在一定范围内，含充填节理岩体抗压强度峰值随着充填物弹性模量的提高而提高；充填物与基体材料弹性模量越接近，无锚含充填节理岩体试件的峰后塑性越好，但充填物对加锚试件的峰后塑性影响很小；充填物与基体材料弹性模量差值越大，试件峰后应力-应变曲线应力下降速率越快；当裂隙充填物弹性模量低于基体材料时，试件内沿受力方向出现拉应力，拉应力的峰值及分布区域随充填物弹性模量的降低而增大。

关键词： 节理岩体；相似材料；充填裂隙；力学性能；锚固效应

Influence of crack fillings to rock uniaxial compression mechanical property and anchoring effect

Abstract:

The uniaxial compression mechanical properties and anchoring effect of jointed rock mass with different crack fillings were analyzed.The influences of different crack fillings on jointed rock mass mechanical properties and anchoring effect were studied through similar material pieces uniaxial compression testing and numerical computation.The research results show that in a certain extent the compressive strength peak values increase with the increment of crack fillings elastic modulus;the less the differences between crack filling elastic modulus and that of matrix material，the better the jointed rock mass post peak plasticity properties;there are little influences affected by crack fillings on bolted jointed rock mass post peak plasticity properties;the more the differences between crack filling elastic modulus and that of matrix material，the more rapidly the stresses decrease after peak;the tensile stress begins to appear along the loading direction when the elastic modulus of crack filling is less than that of matrix material，the tensile stress peak values and distribution areas increase with the decrease of crack filling elastic modulus.

Keywords: jointed rock mass;similar material;filled crack;mechanical property;anchoring effect

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