عنوان مقاله:

Investigating tensile strength and fragmentation of anisotropic rocks in 3-D using the Brazilian test

محل انتشار:

اولین کنفرانس زمین شناسی مهندسی و محیط زیست ایران (سال: 1378)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

This paper presents laboratory work where rock strength anisotropy and fines fraction of a gneiss has been determined by means of the Brazilian test of core samples. Samples of a diameter of 42 mm were taken in 3-D from rock blocks, cut into 21 mm specimens and subjected to the Brazilian test. Samples of each direction were loaded at two perpendicular directions. The results have been expressed as two factors (a) tensile strength and (b) fines fraction -anisotropy. The tensile strength anisotropy is defined as Kt~= crtv/cr~ where CJ1v and urp are the tensile strength of specimens loaded perpendicular and parallel to foliation respectively. This factor had different values for specimens of different directions and varied between 1.2 to 1.5. The fines fraction anisotropy is defined as the percentage of rock particles smaller than 2mm in thickness generated due to failure of the specimen. This factor is defined as Kr3 = f) fp where f,. and fp are the fines fraction of specimens loaded perpendicular and parallel to foliation respectively. The value of this fac tor varied between 1.2 to 2.4 for the tested sample groups. The correlation between the tensile strength and fines fraction was relatively high which implies dependency of fines fraction on tensile strength. The tensile strength and fines fraction generalJy exhibited large standard deviation. The result of this study is applicable to anisotropic rocks

کلمات کلیدی:

Brazilian test, fines fraction, fines generation, rock anisotropy, tensile strength anisotropy