

## عنوان مقاله:

Investigation of mechanical properties of dry, saturated and frozen highly porous limestone

## محل انتشار:

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## خلاصه مقاله:

Understanding mechanical properties of frozen rocks is a key consideration in designing civil and mining infrastructure in regions exposed to freezing temperature. Although freezing has been used for decades for improving the strength parameters of rock masses around underground opening, there is not much research on the behavior of materials and more studies are still needed to put forward. The objective of this paper is to investigate the relationship between different mechanical properties of highly porous limestone in case of dry, water saturated and frozen conditions. For this purpose, 35 cylindrical highly porous limestones specimens were taken and classified based on their density similarity. The samples were tested in air dry, water saturated and frozen (-20 C) conditions. The laboratory tests included firstly non-destructive tests, such as measured the density and the ultrasonic wave velocities in different petrophysical states. Parallel, capillary water absorption was measured, as well. The Uniaxial Compressive Strength (UCS) and the tensile strength (using Brazilian test) were applied. It was found, that the mechanical behavior of the frozen rock is significantly changing: increasing both the strength and the rigidity of the intact rock. The goal of this paper is to present these changes

## کلمات کلیدی:

Highly porous limestone, frozen rock, uniaxial compressive strength, rigidity, elasticity modulus, density

## لینک ثابت مقاله در پایگاه سیویلیکا:

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