عنوان مقاله:

The Influence of thermal breakage on physio-mechanical behavior of Ghulmet marble north Pakistan

محل انتشار:

مجله بین المللی معدن و مهندسی زمین, دوره 56, شماره 2 (سال: 1401)

تعداد صفحات اصل مقاله: 5

نویسندگان:

Naeem Abbas - *Department of Mining Engineering, Karakoram International University (KIU), Gilgit, Pakistan*

Kegang Li - *Faculty of Land Resource Engineering, Kuming University of Science and Technology, Kunming, Yunnan, China*

Asghar Khan - *Department of Earth Sciences, Karakoram International University (KIU), Gilgit, Pakistan*

Javed Qureshi - *Department of Earth Sciences, Karakoram International University (KIU), Gilgit, Pakistan*

خلاصه مقاله:

Geotechnical engineering applications comprises high temperature such as deep geological disposal of nuclear waste, exploitation of geothermal process, etc. High temperature and thermal environments can affect the mechanical properties of building materials used in civil engineering (concrete, building rock, steel, etc.). The constant action of regular thermal changes in situations of excess temperature is the main source of the alteration of marble in monumental and artistic buildings. In this study, the effect of both the specimen size and temperature on the physio-mechanical characteristics of dolomitic marble has been investigated. The temperature range selected was ۲۰-۶۰۰°C. It was observed that the color of samples changes with temperature rise. The Uniaxial compression strength (UCS), P-wave velocity (Vp), and Young's modulus decreased with temperature rise. While the peak strain increases with temperature. The UCS and the peak strain showed a decreasing trend at the high diameter specimens. In the case of ۴۳mm diameter specimens the peak stress reduced from ۶۰MPa-۲۶MPa with a rise in temperature from ۲۰-۶۰۰°C. While at the same temperature range the peak strain was observed as ۱.۷-۳.۳ and Young's modulus was ۳۴-۸GPa. For ۷۵mm diameter, the peak stress is reduced to ۱۷MPa when the temperature rises to ۶۰۰°C and Young's modulus decreased to ۴GPa while the peak strain increased from ۲.۳ to ۳.۹. The pulse velocity decreased from ۲.۷۵ km/s to ۰.۸km/ and the porosity value increased from ۰.۹ to ۱.۵%.

کلمات کلیدی:

temperature, Specimen size, Uniaxial compressive strength, P-wave velocity, Stress