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Void size effect on the strength depending on the core diameter in intact rocks

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The unconfined compressive strength of rocks is very important parameter for design of structures either upon or inside rocks. In order to determine this parameter, the unconfined compressive strength tests are applied on NX core sized (54 mm) circular cylinders of rock samples having a height to diameter ratio of $\sim$2 or more. Importance of effect of the grain size on the needed core diameter is known and taken into the consideration. Selection of the core diameter 10 times larger than the largest grain diameter is generally suggested. So, the effect of the void size on the core diameter (also in selection of core length) may be expected. In this research, investigation of the void size effect of rocks with voids on the strength due to the core diameter is aimed. As a main result of the study, it was found that the appropriate core diameter depending on the volume of the voids should be selected for determination of the correct strength value of the intact rock.