

# Application of Impact-Echo Method to Heterogeneous Materials

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Heterogeneous materials such as rocks cannot be expected to have uniform quality and properties when used as structural materials. For example, in case of large rocks with a diameter greater than one meter that could be used to protection wall, measures should be taken to identify defects, such as internal cracks or fracture zones, whose adverse influence on material strength cannot easily be detected using traditional, destructive testing methods that rely on a few, small samples, such compression strength tests on cores taken from the rock. In these instances, the impact-echo method, which is simple enough for on-site tests and has good accuracy, could be used as a quick test method to evaluate material strength and detect internal defects in large rock specimens. In this study, measurements using the impact-echo method were performed on various types of rocks whose structural response was studied under large impact loads. The applicability of impact-echo method for estimation of rock strength was verified by comparing these measurements with those from other, more traditional, compression strength tests.

**Key Words** : heterogeneous material, impact-echo method, compression strength, rock