



## **Vane shear test for cohesionless soils**

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The vane shear test (VST) is a simple and rapid testing method for determining the undrained shear strength of cohesive soils. It has not been applied for granular soils because the failure surface was irregular and hardly determined due to their cohesionless property. In this study, the VST was used to determine the shear strength of cohesionless soils such as sand. A small laboratory vane with 5 cm in diameter and 10 cm in height was inserted into sand within pressurized cell. When the vane rotates within sand, a failure surface can be assumed to be cylindrical shape because the sand is pressurized with loading frame. Dry Nakdong River sand was prepared for loose and dense conditions in the cell and the axial pressure of 50, 100, and 200 kPa was applied on the surface of sand. The relationship between measured torque and resistant force along cylindrical shape due to friction of sand was derived and the internal friction angle of sand was determined for loose and dense conditions. It was possible for the VST to determine the shear strength of sand under confined condition.