

SHEAR STRESS MEASUREMENT



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The shear strength or stress of the soil depends on different soil characteristics such as for instance: the granular composition, the humus content, the humidity and (in case of vegetation covered areas) the degree of coverage and the density of the roots.

In order to determine the shear stress in the strata in for instance a profile pit, on the surface (for instance a sports terrain), at the bottom of a bore-hole or in a sample, several different shear stress meters have been developed.

The principle of the shear stress meters is simple: an axle with vanes (or fins) connected to it is placed in the soil vertically after which it is turned around with a certain speed and force.

The force required is measured at the breakpoint of the soil and from this the shear stress at the location of the measuring point can be calculated. Depending on the type of soil different vanes can be applied.

14.05 Field inspection vane tester, standard set for measurement up to 200 kPa (20 t/m²) to a depth of 3 m

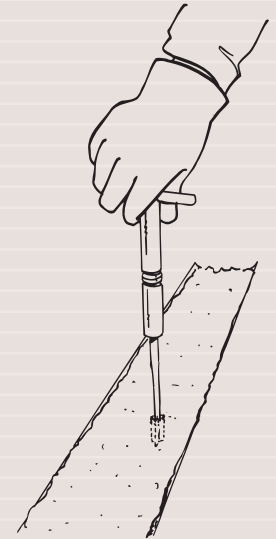
The field inspection vane tester can be used to determine the maximum shearing force that can be exercised on a soil. Measurement in the field (on the surface, in profile pits or at the bottom of bore holes) as well as in the laboratory (on samples) are possible.

The shear stress measured can be read on a clearly readable scale ring.

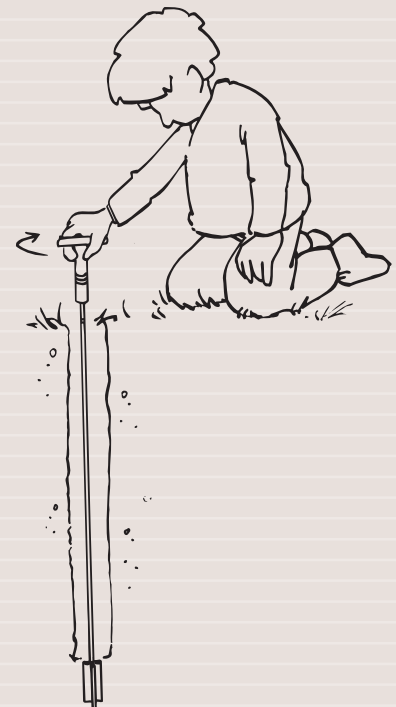
In soft soils it is not necessary to make a borehole first. In order to determine the friction on the extension rods a dummy vane is available in these situations.

The standard set contains, among other items: a field inspection vane tester, complete with three vanes (16 x 32, 20 x 40 and 25.4 x 50.8 mm) and a dummy vane, various extension rods, spanners and a solid carrying bag.

Using the field inspection vane tester the shear stress at the surface of a soil sample can be determined.



The determination of the shear strength at the bottom of a pre-drilled borehole in cohesive soils.



Field inspection vane tester set



Three vanes and a dummy vane



Field inspection vane tester

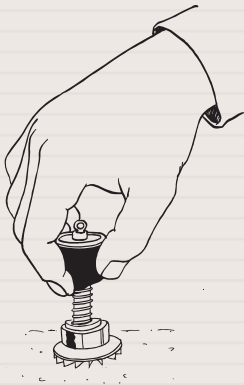


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Measuring the shear strength in a borehole with the field inspection vane borer.



The shear strength in a sample is determined with the pocket vane tester.



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14.08 Field inspection vane borer, standard set for measurement up to 160 kPa (16 t/m²) and a depth of 10 m

The robust field inspection vane borer is a somewhat heavier tool for measuring the shear strength in the field.

Without pre-drilling a hole the vane can be pushed or hammered into the soil. If the soil is too hard, then it is recommended to pre-drill a hole. Measurements can be executed up to a depth of 10 meter and a shear strength can be measured to a maximum of up to 160 kPa (16 t/m²). Because of its unique 180° slip coupling this type of vane tester can be used to measure the friction and the shear strength of the rods direct and separately.

The standard set contains, among other items: the measuring body, two vanes (60x120 mm and 75.8x151.5 mm), various extension rods, spanners, accessories and a carrying case. Optionally available is an extractor.

14.10 Pocket vane tester for measurement up to 0.025 kPa (2.5 kg/cm²)

The pocket vane tester is a shear strength measuring tool that is used in profile pits or on the surface. The small, practical format also makes the tool very suitable for testing on soil samples.

The short period of time the test takes allows for several measurements in the same soil or layer which in turn allows for the calculation of an average value.

The shear strength can be read from a scale fitted with dragging pointer.

Conditions for correct measurement are: a flat surface, care placing of the vanes in the soil and turning the meter with a constant (relaxed) speed.

The pocket vane tester is supplied inclusive of note pad, carrying bag and 3 vanes with a measuring range of respectively 0 - 0.2 / 0 - 1 and 0 - 2.5 kg/cm².



Measuring body robust vane tester



Pocket vane tester



Field inspection vane borer set