Australian Standard™

AS 1289.6.2.1

Methods of testing soils for engineering purposes

Method 6.2.1: Soil strength and consolidation tests—Determination of the shear strength of a soil—Field test using a vane

1 SCOPE

This Standard sets out a method for determining the shear strength of a soil in the field by measuring the torque required to cause a vane of cruciform section to shear the soil. The method is suitable for use for very soft to firm non-fissured clays.

2 REFERENCED DOCUMENT

The following document is referred to in this Standard:

BS
4019 Rotary core drilling equipment
4019.3 Part 3: Specification for System A. Metric units

3 APPARATUS

The following apparatus is required:

(a) Vane of cruciform shape, preferably of stainless steel, conforming to Figure 1 (see Note 1). For soils of shear strength up to 50 kPa, a vane 130 mm long × 65 mm diameter × 3.0 mm thick is satisfactory (see Note 2). For soils of shear strength in the range 50 to 75 kPa, a vane 100 mm long × 50 mm diameter × 1.6 mm thick is satisfactory. The percentage area ratio of the vane, as expressed in the following equation, shall be kept as low as practicable and shall not exceed 15 percent:

$$\text{Area ratio} = \frac{8t(D-d)+\pi d^2}{\pi D^2} \times 100 \qquad \ldots (3)$$

where

t = thickness of vane blades, in millimetres

D = overall blade width, in millimetres

d = diameter of vane rod below the sleeve, including any enlargement due to welding, in millimetres

The vane rod, normally of high-strength steel, shall have a diameter (d) preferably not exceeding 15 mm. It shall be encased in a suitable sleeve commencing approximately 30 mm above the vane blades and extending for the distance penetrated into the soil, to exclude soil particles and the effects of soil adhesion.