AS 1289.6.6.1:2020

Methods of testing soils for engineering purposes

Method 6.6.1: Soil strength and consolidation tests -- Determination of the one-dimensional consolidation properties of a soil — Standard method

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Australian Building Codes Board
Australian Chamber of Commerce and Industry
Australian Geomechanics Society
Austroads
Cement Concrete & Aggregates Australia — Aggregates
Engineering & Construction Laboratories Association
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Australian STANDARD®

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Preface

This Method was prepared by the Standards Australia Committee CE-009, Testing of Soils for Engineering Purposes, to supersede AS 1289.6.6.1—1998, *Methods of testing soils for engineering purposes, Method 6.6.1: Soil strength and consolidation tests—Determination of the one-dimensional consolidation properties of a soil—Standard method*.

A list of all test methods in the AS 1289 series can be found in the Standards Australia online catalogue.

The objective of this Standard is to determine the rate and magnitude of consolidation of soil when it is restrained laterally and loaded and drained axially, using either manual loading or automated equipment. The Method is most reliable when used on saturated clay soils. For these soils, the rate of consolidation is sufficiently slow for results to be correctly interpreted following the procedures set out in this Standard.

The major change in this edition is allowing for the use of automated apparatus in the performance of the test.

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1 Scope

This Method describes a procedure for determining the rate and magnitude of consolidation of soil when it is restrained laterally and loaded and drained axially, using either manual loading or automated equipment. The Method gives the most reliable results when used on saturated clay soils, to which the consolidation theory applies.

NOTE The result of any test reached in accordance with this procedure requires interpretation in relation to the nature of the soil and the way in which the specimen was obtained and prepared.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1289.2.1.1, *Methods of testing soils for engineering purposes, Method 2.1.1: Soil moisture content tests — Determination of the moisture content of a soil — Oven drying method (standard method)*

AS 1289.3.5.1, *Methods of testing soils for engineering purposes, Method 3.5.1: Soil classification tests — Determination of the soil particle density of a soil — Standard method*

3 Terms and definitions

No terms and definitions are listed in this document.

4 Apparatus

The following apparatus shall be used:

(a) *Load device* — suitable for applying vertical loads to the specimen. The device shall be capable of maintaining specified loads for long periods of time with an accuracy of ± 2 % of the applied load, and permit application of a given load increment within a period of 10 s without impact. In any increment, if the time to apply the load exceeds 10 s the time it took shall be reported.

NOTE 1 Some automated devices may require adjustment of the rate of load application to ensure the load increment is applied within the 10 s limit.

(b) *Consolidation cell* — a device to hold the specimen in a ring which is either fixed (to the base of the consolidation cell) or floating (supported by friction on the periphery of the specimen) with porous plates on each face of the specimen. The consolidation cell shall also provide means for inundating the specimen with water, for transmitting the vertical load, and for measuring the change in thickness of the specimen. The consolidation ring shall meet the following requirements:

(i) The ring shall be metallic with a cutting edge to aid in specimen preparation having a minimum wall thickness of 3 mm and be corrosion resistant in relation to the soil to be tested. The inner surface of the ring shall be smooth.

NOTE 2 Suitable grease — Silicone or "PTFE" (Polytetrafluoroethylene).