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Kakovost tal – Določanje hidravlične prevodnosti v nasičenih poroznih materialih s permeametrom s togo membrano

Soil quality - Determination of hydraulic conductivity of saturated porous materials using a rigid-wall permeameter

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Soil quality — Determination of hydraulic conductivity of saturated porous materials using a rigid-wall permeameter

Qualité du sol — Détermination de la conductivité hydraulique de matériaux poreux saturés à l'aide d'un perméamètre à paroi rigide

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17312 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 5, *Physical methods*.

Introduction

The rate of water flow through the soil is of considerable importance in many aspects of agricultural and urban life. The entry of water into soil, the movement of water to plant roots, the flow of water to drains and wells, and the evaporation of water from the soil surface are but a few of the obvious situations in which the rate of water flow plays an important role. Also, in cases of soil pollution and polluted groundwater, prediction of the rate of movement of soil water is of great importance to obtain knowledge about the spreading of pollutants.

The soil properties that determine the behaviour of soil water flow systems are the hydraulic conductivity and water-retention characteristics. The hydraulic conductivity of soil is a measure of its ability to transmit water. The water-retention characteristics are an expression of its ability to store water. These properties determine the response of a soil/water system to imposed boundary conditions.

Soil quality — Determination of hydraulic conductivity of saturated porous materials using a rigid-wall permeameter

WARNING — This International Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies the determination of the hydraulic conductivity of granular soils (e.g. sand and gravel) using a constant-head method involving a rigid-wall permeameter to measure the laminar flow of water. The procedure establishes representative values of the hydraulic conductivity of granular soils that can occur in natural deposits as placed in embankments, or when used as base courses under pavements.

In order to limit consolidation influences during testing, this procedure is applicable only to disturbed granular soils containing not more than 10 % soil passing a 75-µm sieve.

This procedure is applicable to the measurement of hydraulic conductivity of compacted samples of sands and gravels containing little or no silt, where flow along the rigid wall of the permeameter has no practical implications on the test results. This International Standard is not applicable to silt and clay, where seepage/flow at the boundaries is not acceptable.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
compaction
densification of a soil by means of mechanical manipulation

2.2
dry bulk density
ρ_d
mass per volume of dry soil

NOTE It is expressed in kilograms per cubic metre (kg/m^3).

2.3
hydraulic conductivity
k
rate of discharge of water under laminar flow conditions through a unit cross-sectional area of a porous medium under a unit hydraulic gradient and standard temperature conditions (20 °C)

2.4
hydraulic gradient
change in total hydraulic head of water per unit distance of flow