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**Geotechnical investigation and  
testing — Laboratory testing of soil —**

**Part 1:  
Determination of water content**

*Reconnaissance et essais géotechniques — Essais de laboratoire sur  
les sols —*

*Partie 1: Détermination de la teneur en eau*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword - Supplementary information](#)

ISO 17892-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical investigation and testing*, in collaboration with Technical Committee ISO/TC 182, *Geotechnics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 17892-1 cancels and replaces ISO/TS 17892-1:2004, which has been technically revised. It also incorporates the Technical Corrigendum ISO/TS 17892-1:2004/Cor 1:2006.

ISO 17892 consists of the following parts, under the general title "*Geotechnical investigation and testing — Laboratory testing of soil*":

- *Part 1: Determination of water content*
- *Part 2: Determination of bulk density*
- *Part 3: Determination of particle density*
- *Part 4: Determination of particle size distribution*
- *Part 5: Incremental loading oedometer test*
- *Part 6: Fall cone test*
- *Part 7: Unconfined compression test on fine-grained soils*
- *Part 8: Unconsolidated undrained triaxial test*
- *Part 9: Consolidated triaxial compression tests on water-saturated soils*
- *Part 10: Direct shear tests*
- *Part 11: Determination of permeability by constant and falling head*
- *Part 12: Determination of Atterberg limits*

## Introduction

This document covers areas in the international field of geotechnical engineering never previously standardised internationally. It is intended that this document presents broad good practice throughout the world and significant differences with national documents is not anticipated. It is based on international practice (see Reference [1]).



# Geotechnical investigation and testing — Laboratory testing of soil —

## Part 1: Determination of water content

### 1 Scope

This International Standard specifies a method of determining the water content of soils.

This International Standard is applicable to the laboratory determination of the water (also known as moisture) content of a soil test specimen by oven-drying within the scope of geotechnical investigations. The water content is required as a guide to the classification of natural soils and as a control criterion in re-compacted soils, and is measured on samples used for most field and laboratory tests. The oven-drying method is the definitive procedure used in usual laboratory practice.

The practical procedure for determining the water content of a soil is to determine the mass loss on drying the test specimen to a constant mass in a drying oven controlled at a given temperature. The mass loss is assumed to be due to free water and is referenced to the remaining dry mass of solid particles.

**NOTE** This document fulfils the requirements of the determination of water content of soils for geotechnical investigation and testing in accordance with EN 1997-1 and EN 1997-2.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 386, *Liquid-in-glass laboratory thermometers — Principles of design, construction and use*

ISO 14688-1, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

### 3 Terms and definitions

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

#### 3.1 water content

$w$

ratio of the mass of free water to the mass of dry soil

#### 3.2 fluid content

$w_{fl}$

ratio of the mass of free water including dissolved solids to the mass of dry soil

### 4 Equipment

See [Annex A](#) for calibration requirements of the following equipment.